

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,1 q7
 Edition : 02.01.90
 Replaces : 10.85
 Test oil : ISO-4113
 Combination no. : 0 402 046 208
 Injection pump
 Pump designation : PES6P120A720LS388
 EP type number : 0 412 026 030
 Governor
 Governor design. : RQ250/1100PA509
 Governor no. : 0 421 801 117

Customer-spec. information
 Customer : MAN

Engine : D2566MKF

1st version kW : 206.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 17.8...18.0

100 s: (17.5...18.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 700

Del.quantity : 178.0...180.0

1000 : (175.0...183.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.20

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 7.80
Speed rpm : 250
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 335...375

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 11.40...11.50
2nd speed rpm : 1100
Rack travel in m: 10.20...10.30
3rd speed rpm : 875
Rack travel in m: 11.10...11.30
4th speed rpm : 985
Rack travel in m: 10.40...10.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.30
2nd pressure hPa : 310
Rack travel in m: 10.30...10.40
3rd pressure hPa : 430
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

A02

Speed rpm : 1100
Del.quantity cm3/ : 160.0...166.0
1000 s: (157.0...169.0)
Aneroid pressure h: 700
Speed rpm : 650
Del.quantity cm3/ : 171.0...177.0
1000 s: (168.0...180.0)
Aneroid pressure h: 310
Speed rpm : 500
Del.quantity cm3/ : 131.0...137.0
1000 s: (128.0...140.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 104.0...106.0
1000 s: (101.0...109.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (201.0...229.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.20...6.40
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7083

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 8,1 a 3
Edition : 20.12.91
Replaces : 29.11.91
Test oil : ISO-4113

Combination no. : 0 402 046 347

Injection pump
Pump designation : PES6P110A72ORS530
EP type number : 0 412 016 075
Governor
Governor design. : RQV450...1075PA1016-3
Governor no. : 0 421 813 968

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8365.25.584

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 450.0

Rack travel in mm : 6.0...6.4

Del.quantity cm³/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1135

travel mm : 7.00...7.20

2nd speed rpm : 450

travel mm : 0.70...1.10

3rd speed rpm : 700

travel mm : 3.30...3.90

4th speed rpm : 950

travel mm : 5.60...6.00

5th speed rpm : 1650

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 8.50...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h: 700

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Testing:

1st rack travel in: 9.80
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 350
Minimum rack travel: 9.00
Speed rpm : 450
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 490...550

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 480
Rack travel in m: 10.40...10.50
3rd pressure hPa : 440
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm3/ : 126.0...130.0
1000 s: (123.0...133.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 93.0...95.0
1000 s: (90.5...97.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 185.0...215.0
1000 s: (181.0...219.0)

LOW IDLE

Del.quantity cm3/ : 17.0...22.0
1000 s: (14.5...24.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 a
Edition : 16.02.90
Replaces : 3.85
Test oil : ISO-4113
Combination no. : 0 402 046 719
Injection pump
Pump designation : PES6P120A32ORS3070
EP type number : 0 412 026 703
Governor
Governor design. : RQV250...1100PA495
Governor no. : 0 421 813 236

Customer-spec. information
Customer : RVI

Engine : MIDR 063540

1st version kW : 223.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.00

2nd speed rpm : 800
travel mm : 4.60...4.80

3rd speed rpm : 1100
travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 193.0...195.0

1000 : (190.0...198.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Testing:
1st rack travel in: 11.90
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 290...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.90...13.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.70
2nd pressure hPa : 290
Rack travel in m: 12.50...12.60
3rd pressure hPa : 210
Rack travel in m: 11.00...11.40

START CUT-OUT

Speed 1/min : 190 (210)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 1100
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 12° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 15,9 c
Edition : 06.07.90
Replaces : 5.85
Test oil : ISO-4113

Combination no. : 0 402 046 753

Injection pump
Pump designation : PES6P130A320RS3133
EP type number : 0 412 036 702
Governor
Governor design. : RQV350...900PA618
Governor no. : 0 421 813 327

Customer-spec. information
Customer : BAUDOUIN

Engine : 6P15-SRCE

1st version kW : 368.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.40...12.50

Del.quantity cm³/ : 30.8...31.1

100 s: (30.4...31.4)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 2.0...2.6

100 s: (1.6...3.0)

Spread cm³ : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.10...1.40

2nd speed rpm : 500
travel mm : 3.10...3.80

3rd speed rpm : 800
travel mm : 6.50...6.90

4th speed rpm : 900
travel mm : 7.80...8.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 940
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Del.quantity : 308.0...311.0
1000 : (304.5...314.5)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 11.40
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1005...1035
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 20...28

Testing:

Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 350
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 940...950

Remarks:

:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ROL 12,2 i1
Edition : 18.12.91
Replaces : 20.9.91
Test oil : ISO-4113

Combination no. : 0 402 046 779

Injection pump
Pump designation : PES6P120A320RS3170-1
EP type number : 0 412 026 726
Governor
Governor design. : RQ750PA826-1
Governor no. : 0 421 801 366

Customer-spec. information
Customer : PERKINS

Engine : EAGLE LE

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 212.0...214.0

1000 : (209.0...217.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.10

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 776...791

4th rack travel in: 900

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (176.0...224.0)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 f 1
Edition : 18.12.91
Replaces : 14.4.89
Test oil : ISO-4113

Combination no. : 0 402 046 789

Injection pump
Pump designation : PES6P120A320RS3139
EP type number : 0 412 026 718
Governor
Governor design. : RQV275...1000PA728-3
Governor no. : 0 421 813 657

Customer-spec. information
Customer : RVI

Engine : MIDR 062045 H

1st version kW : 227.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 19.1...19.3

100 s: (18.8...19.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.8...2.4
100 s: (1.5...2.7)

Spread cm3 : 0.8
100 s: (1.2)

(9) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.10
2nd speed rpm : 450
travel mm : 3.30...3.70
3rd speed rpm : 800
travel mm : 5.60...6.00
4th speed rpm : 1000
travel mm : 7.00...7.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1170
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 191.0...193.0
1000 : (188.0...196.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 10.00
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 310...415

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 280
Rack travel in m: 10.30...10.40
3rd pressure hPa : 160
Rack travel in m: 9.30...9.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 189.0...195.0
1000 s: (186.0...198.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 99.0...101.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 18.0...24.0
1000 s: (15.0...27.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 f
Edition : 18.12.91
Replaces : 30.11.90
Test oil : ISO-4113

Combination no. : 0 402 046 811

Injection pump
Pump designation : PES6P110A320RS3233
EP type number : 0 412 016 728
Governor
Governor design. : RQV275...1175PA833-4
Governor no. : 0 421 813 762

Customer-spec. information
Customer : RVI

Engine : MIDR 060226D

1st version kW : 166.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
& maximum rack tra: 13.0...14.0
Difference ° CS : 1.25...3.25

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 11.7...11.9

100 s: (11.4...12.1)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.6

Del.quantity cm³/ : 3.2...3.8

100 s: (2.9...4.0)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.40...0.60

2nd speed rpm : 450
travel mm : 2.90...3.50

3rd speed rpm : 800
travel mm : 4.60...5.00

4th speed rpm : 1175
travel mm : 6.90...7.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000
Del.quantity : 117.0...119.0
1000 : (114.5...121.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 12.50
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1405...1435
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...10.00
2nd pressure hPa : 440
Rack travel in m: 12.60...12.70
3rd pressure hPa : 200
Rack travel in m: 10.50...10.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 113.5...118.5
1000 s: (110.5...121.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 51.0...53.0
1000 s: (48.5...55.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 85.0...105.0
1000 s: (81.0...109.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm³/ : 32.0...38.0
1000 s: (29.5...40.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SAC 19,1 a
Edition : 12.01.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 046 813
Injection pump
Pump designation : PES6P110A320LS3246
EP type number : 0 412 016 732
Governor
Governor design. : RQV300...750PA874
Governor no. : 0 421 813 663

Customer-spec. information
Customer : SACM

Engine : UD150-L6

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 24.4...24.7

100 s: (24.1...24.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 4.5...4.7

Del. quantity cm³/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.40

2nd speed rpm : 500

travel mm : 4.00...4.40

3rd speed rpm : 750

travel mm : 7.70...7.90

4th speed rpm : 1000

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 770

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 244.0...247.0

1000 : (241.5...249.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:
1st rack travel in: 12.00
Speed rpm : 790...800
2nd rack travel in: 4.00
Speed rpm : 840...870
4th rack travel in: 950
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack trave: 6.10
Speed rpm : 300
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 310...410

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 790...800

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 18.0...23.0
1000 s: (15.5...25.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 g1
 Edition : 25.01.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 820
 Injection pump
 Pump designation : PES6P120A320RS3136-1
 EP type number : 0 412 026 744
 Governor
 Governor design. : RQ750PA597
 Governor no. : 0 421 801 150

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 14.80...14.90
 Del.quantity cm3/ : 33.1...33.3
 100 s: (32.8...33.6)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.8...5.0
 Del.quantity cm3/ : 1.5...2.1
 100 s: (1.2...2.4)
 Spread cm3 : 0.8
 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 331.0...333.0
 1000 : (328.0...336.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Testing:
 1st rack travel in: 13.80
 Speed rpm : 750...755
 2nd rack travel in: 4.00
 Speed rpm : 775...785

BREAKAWAY

1st version
 1mm rack travel less than
 full load rack tr: 13.80
 Speed rpm : 750...755

Remarks:

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : AIF 11,6 a
Edition : 18.12.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 076 058

Injection pump
Pump designation : PES6P120A700RS532-1
EP type number : 0 412 026 061
Governor
Governor design. : RSV300...1200POA552
Governor no. : 0 421 833 368

Customer-spec. information
Customer : IVECO-AIFO

Engine : 8361 SRM 37

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 23.4...23.6
100 s: (23.1...23.9)

Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.6...5.0
Del.quantity cm³/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:
1st rack travel in: 12.50
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1295...1325
4th rack travel in: 1450
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.0

Testing:

Speed rpm : 100
Speed rpm : 300
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 335...395

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 13.50...13.60
2nd speed rpm : 550
Rack travel in m: 13.50...13.70
3rd speed rpm : 350
Rack travel in m: 14.70...15.30

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.20
2nd pressure hPa : 400
Rack travel in m: 12.90...13.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1240...1250

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y
Edition : 18.12.91
Replaces : 10.4.91
Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1100P2A534-
1
Governor no. : 0 421 833 276

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 AF & HF

1st version kW : 180.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 15.0...15.2

100 s: (14.7...15.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 2.3...2.8

100 s: (2.1...3.1)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 150.0...152.0

1000 : (147.5...154.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.80
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1230
3rd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.80...11.90
2nd speed rpm : 700
Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.60...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 720
Rack travel in m: 11.00...11.10
3rd pressure hPa : 895
Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 173.5...178.5
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 120.0...124.0
1000 s: (117.0...127.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 23.5...28.5
1000 s: (21.0...31.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 f
Edition : 15.11.90
Replaces : 2.5.90
Test oil : ISO-4113

Combination no. : 0 402 076 726

Injection pump
Pump designation : PES6P110A720RS3209
EP type number : 0 412 016 722
Governor
Governor design. : RSV400...1050POA537
Governor no. : 0 421 833 287

Customer-spec. information
Customer : JOHN DEERE

Engine : 6619 AT 06

1st version kW : 172.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
: (3.40...3.60)
Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 16.7...16.9

100 s: (16.5...17.2)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.6...2.1

100 s: (1.3...2.3)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 167.5...169.5

1000 : (165.0...172.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.20

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1150...1160

3rd rack travel in: 4.00

Speed rpm : 1160...1190

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 4.6

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 400

Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.20...11.30

2nd speed rpm : 700

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm³/ : 171.5...176.5

1000 s: (169.0...179.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 175.0...195.0

1000 s: (170.0...200.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.00...5.20

Del.quantity cm³/ : 16.0...21.0

1000 s: (13.5...23.5)

Spread cm³ : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE33898

Adjustment without torque-control

A24

spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 3
 Edition : 18.12.91
 Replaces : 22.11.91
 Test oil : ISO-4113
 Combination no. : 0 402 076 743
 Injection pump
 Pump designation : PES6P120A72ORS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV425...1100P2A534-
 8
 Governor no. : 0 421 833 370

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 AN 030

1st version kW : 187.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X3.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 11.80...11.90
 Del.quantity cm3/ : 15.0...15.2
 100 s: (14.7...15.4)

Spread cm3 : 0.4
 100 s: (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 5.7...5.9
 Del.quantity cm3/ : 2.8...3.2
 100 s: (2.5...3.4)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 150.0...152.0
 1000 : (147.5...154.5)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 43...51

Testing:

1st rack travel in: 10.80
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1230
3rd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.80...11.90
2nd speed rpm : 700
Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 720
Rack travel in m: 11.00...11.10
3rd pressure hPa : 895
Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 173.5...178.5
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 120.0...124.0
1000 s: (117.0...127.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 28.0...32.0
1000 s: (25.5...34.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47394

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 u 2
 Edition : 20.12.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 640 836
 Injection pump
 Pump designation : PE12P120A320LS7805
 EP type number : 0 412 620 802
 Governor
 Governor design. : RQV350...1050PA781-2
 Governor no. : 0 421 813 948

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 463.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...160

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.3)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.90...2.40
 2nd speed rpm : 449
 travel mm : 3.00...3.50
 3rd speed rpm : 760
 travel mm : 4.50...5.00
 4th speed rpm : 1107
 travel mm : 7.50...8.00
 5th speed rpm : 1410
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1180
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030
Aneroid pressure h: 700
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 115...123

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 200
Minimum rack travel: 6.80
Speed rpm : 350
Rack travel in mm : 5.20...5.80

CONSTANT REGULATION

Speed rpm : 400...600

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.60...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : 335

Rack travel in m: 12.20...12.40

2nd pressure hPa : 485

Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

A28

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm³/ : 213.0...219.0
1000 s: (210.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 153.0...155.0
1000 s: (150.0...158.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

TESTING & SETTING RACK TRAVEL SENSOR

Supply voltage : 24.0

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 n2
Edition : 06.04.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 871
Injection pump
Pump designation : PE6P120A720RS7170
EP type number : 0 412 626 829
Governor
Governor design. : RQ900PA758-4
Governor no. : 0 421 801 468

Customer-spec. information
Customer : SCANIA

Engine : DS 11

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 019
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8
Test lines : 1 680 750 015
Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

B01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 24.6...24.8

100 s: (24.3...25.1)

Spread cm3 : 0.7

100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 246.0...248.0

1000 : (243.0...251.0)

Spread cm3 : 7.00

1000 : (10.00)

RATED SPEED

1st version

Control lever

position degrees: 83...91

Testing:

1st rack travel in: 11.50

Speed rpm : 900...905

2nd rack travel in: 4.00

Speed rpm : 941...955

4th rack travel in: 1000

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Rack travel in mm : 5.70...5.90

Spread cm³ : 4.00
 1000 s: (7.00)

Remarks:

:

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 i5
 Edition : 18.12.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 900
 Injection pump
 Pump designation : PE6P120A720RS7020
 EP type number : 0 412 626 828
 Governor
 Governor design. : RQV200...1000PA539
 -13
 Governor no. : 0 421 813 849

Customer-spec. information
 Customer : SCANIA

Engine : DS11 74

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600 *

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 1.8...2.2

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60

2nd speed rpm : 350
 travel mm : 2.40...3.00

3rd speed rpm : 650
 travel mm : 4.50...5.10

4th speed rpm : 1045
 travel mm : 8.40...8.60

5th speed rpm : 1150
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 159.0...161.0

1000 : (156.0...164.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 9.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 340...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.90...11.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.60
2nd pressure hPa : 150
Rack travel in m: 9.90...10.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 157.0...165.0
1000 s: (155.0...167.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 116.0...120.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB6,11
Edition : 18.12.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 246 031
Injection pump
Pump designation : PES6MW100/720RS1515
EP type number : 0 413 206 013
Governor
Governor design. : RQV300...1300MW125-1
Governor no. : 0 420 083 258

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 127.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 11.30

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1420...1450

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:

Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.90...9.00

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 500
Rack travel in m: 11.90...12.10
3rd pressure hPa : 1000
Rack travel in m: 12.30...12.40

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 103.5...106.5
1000 s: (101.0...109.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 43.0...45.0
1000 s: (41.0...47.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 I 1
Edition : 18.12.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 246 032
Injection pump
Pump designation : PES6MW100/720RS1515
EP type number : 0 413 206 013
Governor
Governor design. : RQV300...1300MW125-2
Governor no. : 0 420 083 259

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 142.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 11.30

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1420...1450

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:
Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.90...9.00

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 500
Rack travel in m: 11.90...12.10
3rd pressure hPa : 1000
Rack travel in m: 12.30...12.40

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 103.5...106.5
1000 s: (101.0...109.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 43.0...45.0
1000 s: (41.0...47.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB6,101
Edition : 20.12.91
Replaces : 29.11.91
Test oil : ISO-4113

Combination no. : 0 403 446 274

Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RQ300/1300MW105-3
Governor no. : 0 420 082 050

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 715 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 8.80...9.20

2nd speed rpm : 1300

travel mm : 7.50...7.70

3rd speed rpm : 500

travel mm : 4.90...5.50

4th speed rpm : 300

travel mm : 2.10...2.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 1200

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Setting point:
Speed rpm : 1200
Rack travel in mm : 15.5

Testing:
1st rack travel in: 9.90
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 510...550

TORQUE CONTROL
Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.90...11.00
2nd speed rpm : 750
Rack travel in m: 11.60...11.70
3rd speed rpm : 1100
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 200
Rack travel mm : 10.20...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...9.90
2nd pressure hPa : 400
Rack travel in m: 10.80...11.10
3rd pressure hPa : 700
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA8,1D1
Edition : 20.12.91
Replaces : 29.11.91
Test oil : ISO-4113

Combination no. : 0 403 446 284

Injection pump
Pump designation : PES6MW100/720RS1197
EP type number : 0 413 406 185
Governor
Governor design. : RQV325...1250MW109-1
K
Governor no. : 0 420 083 995

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8060.45.6090

1st version kW : 167.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
Rack travel in mm : 14.50...14.60
Del.quantity cm³/ : 10.5...10.7
100 s: (10.3...10.9)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 325.0
Rack travel in mm : 7.7...7.9
Del.quantity cm³/ : 2.0...2.4
100 s: (1.7...2.6)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
travel mm : 10.00...10.40
2nd speed rpm : 825
travel mm : 4.90...5.10
3rd speed rpm : 400
travel mm : 2.90...3.50
4th speed rpm : 325
travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 1200
Del.quantity : 105.0...107.0
1000 : (103.0...109.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.50
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.8

Testing:
Speed rpm : 200
Minimum rack travel: 9.50
Speed rpm : 325
Rack travel in mm : 7.70...7.90

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.50...14.60
2nd speed rpm : 1100
Rack travel in m: 14.20...14.40
3rd speed rpm : 900
Rack travel in m: 13.60...13.80
4th speed rpm : 700
Rack travel in m: 13.50...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.20...11.30

Measurement
Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 11.70...11.80
2nd pressure hPa : 700
Rack travel in m: 12.80...13.10
3rd pressure hPa : 1000
Rack travel in m: 13.50...13.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000

Speed rpm : 1100
Del.quantity cm³/ : 108.0...111.0
1000 s: (105.5...113.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 67.0...69.0
1000 s: (65.0...71.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...60.0
1000 s: (37.0...63.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.70...7.90
Del.quantity cm³/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 J 1
Edition : 18.12.91
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 403 446 291

Injection pump
Pump designation : PES6MM100/320RS1214
EP type number : 0 413 406 204
Governor
Governor design. : RQV275...1250MM115-1
K
Governor no. : 0 420 083 992

Customer-spec. information
Customer : RVI

Engine : MIDR 060226 V

1st version kW : 129.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 16.50...19.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
Rack travel in mm : 12.80...12.90
Del.quantity cm³/ : 10.3...10.5
100 s: (10.1...10.7)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 275.0
Rack travel in mm : 5.80...6.20
Del.quantity cm³/ : 2.0...2.4
100 s: (1.7...2.6)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1330
travel mm : 9.80...10.20
2nd speed rpm : 950
travel mm : 6.90...7.10
3rd speed rpm : 550
travel mm : 3.60...4.20
4th speed rpm : 275
travel mm : 0.80...1.20

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1350
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 1000
Del.quantity : 103.0...105.0
1000 : (101.0...107.0)

Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Setting point:
Speed rpm : 1350
Rack travel in mm : 16.5

Testing:
1st rack travel in: 11.80
Speed rpm : 1320...1340
2nd rack travel in: 4.00
Speed rpm : 1460...1500
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 238...246
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 7.1

Testing:
Speed rpm : 200
Minimum rack travel: 6.10
Speed rpm : 275
Rack travel in mm : 5.50...5.90

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 11.90...12.00
3rd speed rpm : 1000
Rack travel in m: 12.30...12.50
4th speed rpm : 500
Rack travel in m: 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1000
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 11.70...11.90

2nd pressure hPa : 140
Rack travel in m: 12.00...12.20
3rd pressure hPa : 180
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 98.5...101.5
1000 s: (98.0...104.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 1250
Del.quantity cm³/ : 89.0...91.0
1000 s: (87.0...93.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1320...1340

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 88.0...112.0
1000 s: (85.0...115.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del.quantity cm³/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:
Start-of-delivery blocking at start of
delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 B 9
 Edition : 18.12.91
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 295
 Injection pump
 Pump designation : PES6MW100/720RS1131-
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RGV300...1300MW67-5
 Governor no. : 0 420 083 262

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 155.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.80

2nd speed rpm : 880

travel mm : 4.90...5.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.20...11.30
2nd pressure hPa : 350
Rack travel in m: 12.10...12.40
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600

Del.quantity cm³/ : 85.0...88.0
1000 s: (82.5...90.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MMM 6,2 F
 Edition : 18.12.91
 Replaces : 08.91
 Test oil : ISO-4113
 Combination no. : 0 403 466 125
 Injection pump
 Pump designation : PES6MW100/320/3RS116
 2-1
 EP type number : 0 413 406 196
 Governor
 Governor design. : RSV325...900MW1A340
 Governor no. : 0 420 085 144

Customer-spec. information
 Customer : MMM

Engine : TD 226 B-6
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance \pm ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 10.40...10.50
 Del. quantity cm³/ : 11.6...11.8
 100 s: (11.4...12.0)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 325.0
 Rack travel in mm : 6.3...6.5
 Del. quantity cm³/ : 0.8...1.2
 100 s: (0.5...1.4)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Del. quantity : 116.5...118.5
 1000 : (114.5...120.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 98...106

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 9.40
 Speed rpm : 940...950
 2nd rack travel in: 4.00

Speed rpm : 1000...1030
4th rack travel in: 1100
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 6.30...6.50

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (97.0...123.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 A 32
 Edition : 20.12.91
 Replaces : 01.91
 Test oil : ISO-4113
 Combination no. : 0 403 474 010
 Injection pump
 Pump designation : PES4MM100/720RS1127
 EP type number : 0 413 404 103
 Governor
 Governor design. : RSV350...750MWOA336-
 5
 Governor no. : 0 420 085 164

Customer-spec. information
 Customer : MB-NFZ

Engine : OM364A

1st version kW : 84.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.80...13.90
 Del.quantity cm3/ : 9.5...9.7
 100 s: (9.3...9.9)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 7.3...7.9
 Del.quantity cm3/ : 0.9...1.3
 100 s: (0.6...1.5)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 95.0...97.0
 1000 : (93.0...99.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 76...84

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 12.80

Speed rpm : 750...755 *
2nd rack travel in: 4.00
Speed rpm : 780...793
4th rack travel in: 800
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7.6

Speed rpm : 350

Rack travel in mm : 7.30...7.90

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 90.0...100.0

1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 7.30...7.90

Del.quantity cm³/ : 9.0...13.0

1000 s: (6.5...15.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

:

* Read off speed set under 1.

Add 30...38 min⁻¹ to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 J
 Edition : 18.12.91
 Replaces : 02.91
 Test oil : ISO-4113
 Combination no. : 0 403 474 013
 Injection pump
 Pump designation : PES4MM100/72ORS1127
 EP type number : 0 413 404 103
 Governor
 Governor design. : RSV750...1250MWOA318
 -8
 Governor no. : 0 420 085 167

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 364 A

1st version kW : 84.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230
 Rack travel in mm : 12.40...12.50
 Del.quantity cm3/ : 8.4...8.6
 100 s: (8.2...8.8)
 Spread cm3 : 0.3
 100 s: (0.6)
 2nd speed rpm : 750.0
 Rack travel in mm : 6.3...6.9
 Del.quantity cm3/ : 0.9...1.3
 100 s: (0.6...1.5)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 2.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1230
 Del.quantity : 84.0...86.0
 1000 : (82.0...88.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 88...96

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 11.40

Speed rpm : 1270...1275 *
2nd rack travel in: 4.00
Speed rpm : 1295...1310
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 750
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 750...810

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 73.0...76.0
1000 s: (70.5...78.5)
Spread cm3 : 5.00
1000 s: (7.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1270...1275

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 6.30...6.90
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

* Read off speed set under 1.
Add 25...35 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE5,681
 Edition : 22.11.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 474 021
 Injection pump
 Pump designation : PES4MW100/720RS1181
 EP type number : 0 413 404 107
 Governor
 Governor design. : RSV400...1000MW1A348
 Governor no. : 0 420 035 183

Customer-spec. information
 Customer : LIEBHERR

Engine : D914T

1st version kW : 100.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.70...10.90

Del.quantity cm3/ : 13.0...13.2

100 s: (12.8...13.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...6.0

Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 655

Del.quantity : 130.0...132.0

1000 : (128.0...134.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.70
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1060...1075
3rd rack travel in: 4.00
Speed rpm : 1070...1085
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.00...5.50
Rack travel in mm : 2.00
Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.70...10.90
2nd speed rpm : 500
Rack travel in m: 10.70...10.90
5th speed rpm : 450
Rack travel in m: 11.90...12.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.20

Measurement

Speed 1/min : 500

1st pressure hPa : 530
Rack travel in m: 10.40...10.50
2nd pressure hPa : 655
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 655
Speed rpm : 500
Del.quantity cm3/ : 126.5...129.5
1000 s: (124.0...132.0)

Spread cm3 : 3.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 109.0...111.0
1000 s: (107.0...113.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.00...6.00
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB6/1B11
 Edition : 20.12.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 110
 Injection pump
 Pump designation : PES6MM100/720RS1131-
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV350...1300MWA329
 -11
 Governor no. : 0 420 085 181

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 170.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280
 Rack travel in mm : 14.40...14.50
 Del.quantity cm3/ : 11.4...11.6
 100 s: (11.2...11.8)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 6.1...6.3
 Del.quantity cm3/ : 1.0...1.4
 100 s: (0.7...1.6)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1280
 Aneroid pressure h: 1000
 Del.quantity : 114.0...116.0
 1000 : (112.0...118.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 91...99

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 13.40

Speed rpm : 1330...1335 *
2nd rack travel in: 4.00
Speed rpm : 1410...1423
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.10...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...10.80

Measurement:

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.90...12.10
2nd pressure hPa : 500
Rack travel in m: 13.10...13.30
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 106.5...109.5
1000 s: (104.0...112.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,7 C
 Edition : 18.12.91
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 403 476 111
 Injection pump
 Pump designation : PES6MM100/320RS1198-
 1
 EP type number : 0 413 406 211
 Governor
 Governor design. : RSV350...1250MM2A347
 Governor no. : 0 420 085 182

Customer-spec. information
 Customer : NAVISTAR

Engine : DT-466

1st version kW : 156.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values —

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 900

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.60
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1350...1360
3rd rack travel in: 4.00
Speed rpm : 1340...1370
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.10...5.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.30...9.40

Measurement

Speed 1/min : 500

1st pressure hPa : 265
Rack travel in m: 10.00...10.10
2nd pressure hPa : 455
Rack travel in m: 10.50...10.90
3rd pressure hPa : 900
Rack travel in m: 11.60...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 79.5...83.5
1000 s: (77.5...85.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60

B28

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

: IHC #1818555C91

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2.5 L
Edition : 23.12.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R415
Type number : 0 460 414 083
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery block
Piston stroke mm: 0.35
mm: 0.30...0.40

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.20...4.60

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 500
Setting value bar: 4.40...5.00
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000s.: 32.20...33.20

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000s.: 6.00...8.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm3/
1000s.: 30.50...36.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...90.00
mind 1000s.: 50.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 4.20...4.60
mm: (3.90...4.90)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 800
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
TD travel mm: 2.80...3.00
mm: (2.50...3.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4.40...5.00
bar: (4.20...5.20)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5.70...6.30
bar: (5.50...6.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Supply-pump
pressure bar: 6.20...6.80
bar: (6.00...7.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 2000
Supply-pump
pressure bar: 7.80...8.40
bar: (7.60...8.60)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 97.00...141.00
quantity cm³/10s: (97.00...141.00)
2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Overflow : 115.00...184.00
quantity cm³/10s: (115.00...184.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...38.40
1000S.: (34.70...39.70)
2nd speed 1/min: 2400

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23.20...25.20
1000S.: (19.20...29.20)

4th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.50...36.50
1000S.: (27.50...39.50)

5th speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.50...38.90
1000S.: (35.20...40.30)

6th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.20...33.20
1000S.: (30.20...35.20)

7th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 24.00...28.00
1000S.: (23.20...29.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...8.00
1000S.: (3.00...11.00)

Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...10.00
1000S.: (0.00...10.00)

Part-load del. at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico (ARF)
gaz d'échappement-ARF)

Spacing mm: 20.0

1st speed 1/min: 1250

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 17.00...20.00
1000s.: (16.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 35.00...65.00
1000s.: (35.00...65.00)

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 21.00...31.00
1000s.: (21.00...31.00)

3rd speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 50.00...90.00
1000s.: (50.00...90.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: KOT

MS mm: 1.8

XK mm: -

XL mm: -

Remarks:

Overflow restriction 0.75 mm - Part No.
..343,..344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2.5 L1
Edition : 23.12.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R415-1
Type number : 0 460 414 085
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery block
Piston stroke mm: 0.35
mm: 0.30...0.40
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.20...4.60

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 500
Setting value bar: 4.40...5.00
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 32.20...33.20
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 8.00...10.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm3/
1000S.: 30.50...36.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...90.00
mind 1000S.: 50.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)
electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 4.20...4.60
mm: (3.90...4.90)
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 800
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
TD travel mm: 2.80...3.00
mm: (2.50...3.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4.40...5.00
bar: (4.20...5.20)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5.70...6.30
bar: (5.50...6.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Supply-pump
pressure bar: 6.20...6.80
bar: (6.00...7.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 2000
Supply-pump
pressure bar: 7.80...8.40
bar: (7.60...8.60)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 97.00...141.00
quantity cm³/10s: (97.00...141.00)
2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Overflow : 115.00...184.00
quantity cm³/10s: (115.00...184.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...38.40
1000S.: (34.70...39.70)
2nd speed 1/min: 2400

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23.20...25.20
1000S.: (19.20...29.20)

4th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.50...36.50
1000S.: (27.50...39.50)

5th speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.50...38.90
1000S.: (35.20...40.30)

6th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.20...33.20
1000S.: (30.20...35.20)

7th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 24.00...28.00
1000S.: (23.20...29.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...10.00
1000S.: (5.00...13.00)

Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...10.00
1000S.: (0.00...10.00)

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

Spacing mm: 20.0

1st speed 1/min: 1250

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 17.00...20.00

1000S.: (16.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 35.00...65.00

1000S.: (35.00...65.00)

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 21.00...31.00

1000S.: (21.00...31.00)

3rd speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 50.00...90.00

1000S.: (50.00...90.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: KOT

MS mm: 1.8

XK mm: -

XL mm: -

Remarks:

:
Overflow restriction 0.75 mm - Part No.
...343,...344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CDC 3,9 P60
Edition : 15.01.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R424
Type number : 0 460 424 079
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTAA 3.9

Power KW: 79
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1.2
mm: 0.02(0.06)

Outlet : A

Injection-pump setting values

C07

Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 1.00...1.40
AFB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 85.50...86.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 53.50...54.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 21.00...25.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1335
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 74.00...80.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 115.00...165.00
mind 1000s.: 115.0
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.10...2.90
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 1.00...1.40
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12
8th speed 1/min: 450
Charge press. hPa: -
TD travel mm: 2.00...3.00
mm: (1.80...3.20)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.50...6.10

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.50...8.10

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 69.00...70.00
1000s.: (65.50...73.50)

2nd speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: -

3rd speed 1/min: 1440
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...45.00
1000s.: -

5th speed 1/min: 1335
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 74.00...80.00
1000s.: (71.00...83.00)

9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 81.00...86.00
1000s.: (79.50...87.50)

10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 84.00...89.00
1000s.: (82.50...90.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 85.50...86.50
1000S.: (83.00...89.00)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 53.50...54.50
1000S.: (50.00...58.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 21.00...25.00
1000S.: (18.00...28.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 490
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 140.00...190.00
1000S.: -

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 115.00...165.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3.5...3.9
KF mm: K-01
MS mm: 0.8...1.2
SVS max. mm: -
LDA stroke mm: 7.0

Remarks:

: C.D.C. # 391 3443
Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 3,0 e
 Edition : 18.12.91
 Replaces : 18.10.88
 Test oil : ISO-4113
 Combination no. : 0 400 464 134
 Injection pump
 Pump designation : PES4A80D410/3RS1356
 EP type number : 0 410 484 022
 Governor
 Governor design. : RSV325...1150A8C494-
 3L
 Governor no. : 0 420 232 514

Customer-spec. information
 Customer : KHD

Engine : F3L912

1st version kW : 31.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 2

Phasing : (1-90-270
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 9.60...9.70

Del.quantity cm³/ : 5.4...5.5
 100 s: (5.3...5.7)

Spread cm³ : 0.2
 100 s: (0.4)

2nd speed rpm : 325.0
 Rack travel in mm : 6.9...7.1
 Del.quantity cm³/ : 1.2...1.8
 100 s: (1.0...1.9)
 Spread cm³ : 0.2
 100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Del.quantity : 54.5...55.5
 1000 : (53.0...57.0)
 Spread cm³ : 2.50
 1000 : (4.00)

RATED SPEED

1st version
 Control lever
 position degrees: 92...100

Testing:
 1st rack travel in: 8.60
 Speed rpm : 940...950
 2nd rack travel in: 4.00

Speed rpm : 975...1005
3rd rack travel in: 4.00
Speed rpm : 995...1025
4th rack travel in: 1155
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 325

Rack travel in mm : 6.90...7.10

Rack travel in mm : 2.00

Speed rpm : 425...485

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 9.60...9.70

2nd speed rpm : 500

Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del. quantity cm³/ : 49.0...51.0

1000 s: (47.0...53.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60

Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 100.0...110.0

1000 s: (97.0...113.0)

Rack travel in mm : 16.40...16.80

Remarks:

:

APPLICATION

Compressor

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 t
Edition : 22.01.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 646 273
Injection pump
Pump designation : PE6A95D410RS2525
EP type number : 0 410 696 987
Governor
Governor design. : RQ225/1200AB1007-1L
Governor no. : 0 420 200 096

Customer-spec. information
Customer : DAF

Engine : DHTD 825

1st version kW : 150.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 10.9...11.0

100 s: (10.7...11.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 225.0

Rack travel in mm : 5.7...5.9

Del.quantity cm³/ : 0.7...1.2

100 s: (0.4...1.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 16.80...18.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 109.0...110.0

1000 : (107.0...112.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 17.6

Testing:

1st rack travel in: 11.60
Speed rpm : 1230...1245
2nd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1390
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 5.8

Testing:

Speed rpm : 100
Minimum rack travel: 7.20
Speed rpm : 225
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 340...380
Speed rpm : 450
Maximum rack travel: 1.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.60...12.70
2nd speed rpm : 1200
Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 700
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 1000

1st pressure hPa : 300
Rack travel in m: 12.30...12.40
2nd pressure hPa : 260
Rack travel in m: 11.70...12.00
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 85.5...86.5
1000 s: (83.5...88.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1230...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 7.0...12.0
1000 s: (4.5...14.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b 9
Edition : 22.01.92
Replaces : 29.11.91
Test oil : ISO-4113

Combination no. : 0 400 836 041

Injection pump
Pump designation : PES6A100D320/3RS2691
-2

EP type number : 9 410 230 028
Governor
Governor design. : RGV350...1100AB1227-
1R

Governor no. : 0 420 213 113

Customer-spec. information
Customer : CDC

Engine : 6 CT 8.3

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 12.6...12.8
100 s: (12.4...13.1)

Spread cm³ : 0.4
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.2...5.4
Del. quantity cm³/ : 1.8...2.2
100 s: (1.5...2.4)
Spread cm³ : 0.6
100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.80...2.30
2nd speed rpm : 460
travel mm : 1.60...2.10
3rd speed rpm : 510
travel mm : 2.00...2.50
4th speed rpm : 630
travel mm : 2.70...3.20
5th speed rpm : 1150
travel mm : 7.30...7.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1275
Rack travel in mm : 11.30...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100
Aneroid pressure h: 900
Del.quantity : 126.5...128.5
1000 : (124.0...131.0)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control Lever
position degrees: 112...120

Testing:

1st rack travel in: 11.60
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1255...1285
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 63...71
Speed rpm : 350
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.60...12.70
2nd speed rpm : 500
Rack travel in m: 12.60...12.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 405
Rack travel in m: 10.90...11.00
3rd pressure hPa : 535
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 260 (280)

C15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 79.0...83.0
1000 s: (76.5...85.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 165.0...185.0
1000 s: (162.0...188.0)
Rack travel in mm : 15.30...15.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at 7° after
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 n 11
 Edition : 18.12.91
 Replaces : 21.1.88
 Test oil : ISO-4113
 Combination no. : 0 400 846 336
 Injection pump
 Pump designation : PES6A90D410RS2293W
 EP type number : 0 410 896 049
 Governor
 Governor design. : RQV300...1425AB740L
 Governor no. : 0 420 212 037

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 352 A

1st version kW : 115.0
 Rated speed : 2850

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 950

travel mm : 5.20...5.50

3rd speed rpm : 775

travel mm : 4.10...4.60

4th speed rpm : 550

travel mm : 2.70...3.00

5th speed rpm : 300

travel mm : 0.70...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 71.5...72.5
1000 : (69.5...74.5)
Spread cm3 : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control Lever
position degrees: 110...118

Testing:

1st rack travel in: 9.90
Speed rpm : 1455...1465
2nd rack travel in: 4.00
Speed rpm : 1560...1590
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 64...72

Testing:

Speed rpm : 100
Minimum rack travel: 9.10
Speed rpm : 300
Rack travel in mm : 7.50...7.70

CONSTANT REGULATION

Speed rpm : 370...520

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1455...1465

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 71.0...81.0
1000 s: (68.0...84.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 y 1
 Edition : 18.12.91
 Replaces : 8.10.91
 Test oil : ISO-4113
 Combination no. : 0 400 846 580
 Injection pump
 Pump designation : PES6A95D32ORS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1350AB1248-1R
 Governor no. : 0 420 213 121

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA 360

1st version kW : 138.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038
 Inlet press., bar : 2.80
 Test nozzle holder
 assembly : 1 668 901 110
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75
 : (2.60...2.80)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350
 Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 8.4...8.6
 100 s: (8.2...8.8)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 1.7...2.1
 100 s: (1.5...2.3)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 7.30...7.50
 2nd speed rpm : 1460
 travel mm : 8.10...8.50
 3rd speed rpm : 550
 travel mm : 3.10...3.70
 4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Aneroid pressure h: 900
 Del.quantity : 84.0...86.0
 1000 : (82.0...88.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 11.30
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.40
2nd pressure hPa : 215
Rack travel in m: 10.80...10.90
3rd pressure hPa : 345
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 75.0...79.0
1000 s: (73.0...81.0)

BREAKAWAY

C19

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1816728C91

Limit shutoff stop screw to 1.0 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 4
 Edition : 22.01.92
 Replaces : 19.3.91
 Test oil : ISO-4113

Combination no. : 0 400 846 591

Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RQV300...1400AB1065-
 22L
 Governor no. : 0 420 212 226

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 97.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del. quantity cm³/ : 5.8...6.0
 100 s : (5.6...6.2)

Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 8.9...9.1
 Del. quantity cm³/ : 0.8...1.2
 100 s : (0.5...1.4)

Spread cm³ : 0.3
 100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1450
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del. quantity : 58.0...60.0
 1000 : (56.0...62.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:

1st rack travel in: 8.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 75...83

Testing:

Speed rpm : 100
Minimum rack travel: 10.50
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION

Speed rpm : 500...650

TORQUE CONTROL

Dimension a mm : 1.40
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 11.30...11.60
3rd speed rpm : 650
Rack travel in m: 11.00...11.20
4th speed rpm : 900
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400
Del.quantity cm³/ : 49.0...52.0
1000 s: (46.5...54.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.60...15.00

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 6
 Edition : 22.01.92
 Replaces : 26.7.91
 Test oil : ISO-4113

Combination no. : 0 400 846 594

Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RQV300...1400AB1065-26L
 Governor no. : 0 420 212 230

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 95.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del. quantity cm³/ : 5.8...6.0

100 s: (5.6...6.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del. quantity cm³/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 58.0...60.0

1000 : (56.0...62.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 8.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 75...83

Testing:
Speed rpm : 100
Minimum rack travel: 10.50
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 500...650

TORQUE CONTROL
Dimension α mm : 1.40
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 11.30...11.60
3rd speed rpm : 650
Rack travel in m: 11.00...11.20
4th speed rpm : 900
Rack travel in m: 10.40...10.70

START CUT-CUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm³/ : 49.0...52.0
1000 s: (46.5...54.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.60...15.00

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 5,9 e 2
 Edition : 31.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 598
 Injection pump
 Pump designation : PES6A90D410RS2813
 EP type number : 0 410 896 089
 Governor
 Governor design. : RQV300...1050AB1265-
 L
 Governor no. : 0 420 212 234

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8065.25.094

1st version kW : 145.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 7.9...8.0

100 s: (7.7...8.2)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 400.0

Rack travel in mm : 8.3...8.5

Del.quantity cm³/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 380
 travel mm : 1.60...2.10

2nd speed rpm : 400
 travel mm : 2.00...2.50

3rd speed rpm : 460
 travel mm : 2.60...3.10

4th speed rpm : 740
 travel mm : 4.70...5.20

5th speed rpm : 1105
 travel mm : 8.10...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 79.5...80.5

1000 : (77.5...82.5)

Spread cm3 : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1260
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 75...83

Testing:
Speed rpm : 300
Minimum rack travel: 10.80
Speed rpm : 400
Rack travel in mm : 8.30...8.50

CONSTANT REGULATION
Speed rpm : 450...600

TORQUE CONTROL
Dimension a mm : 1.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 13.50...13.60
3rd speed rpm : 740
Rack travel in m: 13.20...13.40
4th speed rpm : 900
Rack travel in m: 12.50...12.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.20...12.30
2nd pressure hPa : 580
Rack travel in m: 13.30...13.40
3rd pressure hPa : 540

Rack travel in m: 12.80...13.00

START CUT-OUT

Speed 1/min : 320 (340)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 19.50...21.00

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 z 1
 Edition : 18.12.91
 Replaces : 22.11.91
 Test oil : ISO-4113
 Combination no. : 0 400 846 603
 Injection pump
 Pump designation : PES6A95D320RS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1350AB1251-1R
 Governor no. : 0 420 213 125

Customer-spec. information
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 142.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 110

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.05...2.75
 : (2.62...2.80)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 8.4...8.6

100 s : (8.2...8.8)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 1.7...2.1

100 s : (1.4...2.3)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 7.30...7.50

2nd speed rpm : 1460
 travel mm : 8.10...8.50

3rd speed rpm : 550
 travel mm : 3.10...3.70

4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Aneroid pressure h: 900
 Del. quantity : 84.0...86.0
 1000 : (82.0...88.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 44...52

Testing:
1st rack travel in: 11.30
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 12.30...12.40
2nd speed rpm : 850
Rack travel in m: 13.10...13.20
3rd speed rpm : 1200
Rack travel in m: 12.70...12.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.10...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 265
Rack travel in m: 10.30...10.40
3rd pressure hPa : 560
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

C27

1st version
Aneroid pressure h: 900
Speed rpm : 850
Del.quantity cm³/ : 96.0...100.0
1000 s: (94.0...102.0)
Spread cm³ : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 60.5...64.5
1000 s: (58.5...66.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1818798C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 v 2
 Edition : 18.12.91
 Replaces : 22.11.91
 Test oil : ISO-4113

Combination no. : 0 400 846 604

Injection pump
 Pump designation : PES6A95D32ORS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : PQV350...1350AB1248-2R
 Governor no. : 0 420 213 126

Customer-spec. information
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 127.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 110

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75
 : (2.60...2.80)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 7.9...8.1

100 s: (7.7...8.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 7.30...7.50

2nd speed rpm : 1460
 travel mm : 8.10...8.50

3rd speed rpm : 550
 travel mm : 3.10...3.70

4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Aneroid pressure h: 900
 Del.quantity : 79.5...81.5
 1000 : (77.5...83.5)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 10.90
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 110
Rack travel in m: 10.40...10.50
3rd pressure hPa : 300
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 71.0...75.0
1000 s: (69.0...77.0)

BREAKAWAY

DO1

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1816726C92

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 s 1
 Edition : 24.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 608
 Injection pump
 Pump designation : PES6A95D320RS2796
 EP type number : 0 410 896 901
 Governor
 Governor design. : RQ300/1300AB1253-3R
 Governor no. : 0 420 201 654

Customer-spec. information
 Customer : DAF

Engine : NS 156G

1st version kW : 156.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 7.50...10.50

002

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 770

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 770

Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1410...1440

4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack travel: 7.70

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 1290

Rack travel in m: 12.60...12.70

2nd speed rpm : 770

Rack travel in m: 14.20...14.80

3rd speed rpm : 900

Rack travel in m: 13.60...14.20

4th speed rpm : 1000

Rack travel in m: 12.80...13.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 12.80...12.90

Measurement:

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.90...11.10

2nd pressure hPa : 250

Rack travel in m: 12.30...12.40

3rd pressure hPa : 90

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1290

Del.quantity cm³/ : 87.0...89.0

1000 s: (84.5...91.5)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm³/ : 45.5...46.5

1000 s: (43.5...48.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1325...1340

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Del.quantity cm³/ : 6.0...10.0

1000 s: (3.5...12.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 3,1 d
Edition : 24.01.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 863 019

Injection pump
Pump designation : PES3A90D320/3RS2826
EP type number : 0 410 893 007
Governor
Governor design. : RSV325...1150A5C505-5R
Governor no. : 0 420 233 289

Customer-spec. information
Customer : MWM

Engine : TD 226 B3

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 2- 3

Phasing : 0-120-240
Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 750
Rack travel in mm : 9.90...10.00
Del. quantity cm³/ : 6.7...6.8
100 s: (6.5...7.0)
Spread cm³ : 0.3
100 s: (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 6.1...6.3
Del. quantity cm³/ : 3.5...1.1
100 s: (0.3...1.3)
Spread cm³ : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Del. quantity : 67.5...68.5
1000 : (65.5...70.5)
Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 94...102

Testing:
1st rack travel in: 8.90
Speed rpm : 1200...1210

2nd rack travel in: 4.00
Speed rpm : 1230...1260
3rd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.7
Speed rpm : 325
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 400...460

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.80...10.00
2nd speed rpm : 500
Rack travel in m: 9.90...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1150
Del.quantity cm³/ : 75.5...77.5
1000 s: (73.0...80.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1200...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 132.0...142.0
1000 s: (129.0...145.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 k 1
 Edition : 18.12.91
 Replaces : 29.11.91
 Test oil : ISO-4113
 Combination no. : 0 400 864 088
 Injection pump
 Pump designation : PES4A85D410/3RS2799
 EP type number : 0 410 884 944
 Governor
 Governor design. : RSV325...1250A2C2253
 -2L
 Governor no. : 0 420 232 556

Customer-spec. information
 Customer : KHD

Engine : BF4L913

1st version kW : 78.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.45...2.55
 : (2.40...2.60)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 11.70...11.80
 Del.quantity cm3/ : 8.4...8.5
 100 s: (8.2...8.7)
 Spread cm3 : 0.3
 100 s: (0.5)

2nd speed rpm : 325.0
 Rack travel in mm : 7.5...7.7
 Del.quantity cm3/ : 1.2...1.8
 100 s: (1.0...2.0)
 Spread cm3 : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 1000
 Del.quantity : 84.0...85.0
 1000 : (82.0...87.0)
 Spread cm3 : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 91...99

Testing:
 1st rack travel in: 10.70
 Speed rpm : 1290...1300
 2nd rack travel in: 4.00
 Speed rpm : 1320...1350

4th rack travel in: 1480
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 60...68
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 340...400

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.70...11.80
2nd speed rpm : 500
Rack travel in m: 12.10...12.20
4th speed rpm : 800
Rack travel in m: 11.90...12.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.80...10.90
2nd pressure hPa : 300
Rack travel in m: 11.80...11.90
3rd pressure hPa : 230
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 520
Speed rpm : 800
Del.quantity cm³/ : 80.0...82.0
1000 s: (77.5...84.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 58.0...60.0
1000 s: (56.0...62.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 17.60...18.00

Remarks:

APPLICATION

Compressor

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 52
 Edition : 31.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 874 251
 Injection pump
 Pump designation : PES4A85D410RS2732-1
 EP type number : 0 410 884 943
 Governor
 Governor design. : RSV325...1175A8C2223
 -3L
 Governor no. : 0 420 232 574
 Customer-spec. information
 Customer : KHD
 Engine : F4L913
 1st version kW : 56.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175
 Rack travel in mm : 9.90...10.00
 Del.quantity cm3/ : 6.8...6.9
 100 s: (6.6...7.1)
 Spread cm3 : 0.3
 100 s: (0.4)
 2nd speed rpm : 325.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 0.8...1.4
 100 s: (0.6...1.6)
 Spread cm3 : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1175
 Del.quantity : 68.0...69.0
 1000 : (66.0...71.0)
 Spread cm3 : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 102...110

Testing:

1st rack travel in: 8.90
 Speed rpm : 1215...1225
 2nd rack travel in: 4.00
 Speed rpm : 1245...1275
 3rd rack travel in: 4.00

Speed rpm : 1250...1280
4th rack travel in: 1425
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 9.90...10.00
2nd speed rpm : 500
Rack travel in m: 10.50...10.60
4th speed rpm : 820
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 61.0...63.0
1000 s: (58.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)
Rack travel in mm : 17.10...17.30

Remarks:

: RENAULT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 q 3
 Edition : 24.01.92
 Replaces : 20.12.91
 Test oil : ISO-4113
 Combination no. : 0 400 876 378
 Injection pump
 Pump designation : PES6A95D32ORS2693
 EP type number : 0 410 896 914
 Governor
 Governor design. : RSV300...1300AOC2248
 -2R
 Governor no. : 0 420 233 274

Customer-spec. information
 Customer : DAF

Engine : NT 133

1st version kW : 133.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.40...11.50

Del.quantity cm³/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 104...112

Testing:

1st rack travel in: 9.50
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1390...1420
3rd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1570
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.50...10.60
2nd speed rpm : 500
Rack travel in m: 11.80...11.90
4th speed rpm : 1070
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 160
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm3/ : 73.0...75.0
1000 s: (70.5...77.5)
Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 50.5...51.5
1000 s: (48.5...53.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 k
Edition : 02.10.89
Replaces : 2.86
Test oil : ISO-4113

Combination no. : 0 401 848 732

Injection pump
Pump designation : PE8P120A320LS3807-10
EP type number : 0 411 828 713
Governor
Governor design. : RQV300...1150PA545
Governor no. : 0 421 813 268

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 422 A

1st version kW : 243.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...110

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm³/ : 15.7...15.9

100 s: (15.4...16.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...1.80

2nd speed rpm : 800

travel mm : 6.00...6.20

3rd speed rpm : 1200

travel mm : 8.10...8.30

4th speed rpm : 1260

travel mm : 9.50...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 700
Del.quantity : 157.5...159.5
1000 : (154.5...162.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 9.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1350
Speed rpm : 0.00...1.00

2nd version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 9.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 375...445

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.70...10.80
2nd speed rpm : 750
Rack travel in m: 11.00...11.20
3rd speed rpm : 900
Rack travel in m: 10.90...11.20

Torque control curve - 2nd version

1st speed rpm : 1150
Rack travel in m: 10.7...10.8
2nd speed rpm : 600
Rack travel in m: 11.4...11.5

3rd speed rpm : 900
Rack travel in m: 10.8...11.0

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 400
Rack travel in m: 10.40...10.50
2nd pressure hPa : 470
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 173.5...175.5
1000 s: (170.5...178.5)
Spread cm³ : 7.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 139.0...141.0
1000 s: (136.0...144.0)
Spread cm³ : 7.00
1000 s: (12.0)

2nd version

Aneroid pressure h: 700
Speed rpm : 1150
Del.quantity cm³/ : 157.5...159.5
1000 s: (154.5...162.5)
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm³/ : 167.0...173.0
1000 s: (164.0...176.0)
Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm³/ : 165.0...169.0
1000 s: (162.0...172.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 139.0...141.0
1000 s: (136.0...144.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

Version 1: New version with additional
maximum-speed control spring
Version 2: Old version with no
additional maximum-speed control spring

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u4
Edition : 22.01.92
Replaces : 30.11.90
Test oil : ISO-4113

Combination no. : 0 402 036 742

Injection pump
Pump designation : PES6P120A720/3LS3255
EP type number : 0 412 026 739
Governor
Governor design. : RQ300/1100PA813-7
Governor no. : 0 421 801 474

Customer-spec. information

Customer : MAN

Engine : D2866LF01

1st version kW : 273.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,3

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 14.50...15.50
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.4

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 16.00...17.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650
Rack travel in mm : 16.8

Testing:

1st rack travel in: 13.80
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.80...14.90
2nd speed rpm : 700
Rack travel in m: 15.80...16.00
3rd speed rpm : 900
Rack travel in m: 15.10...15.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

D16

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7946

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 16,2 b
Edition : 24.01.92
Replaces : 10.2.89
Test oil : ISO-4113

Combination no. : 0 402 646 857

Injection pump
Pump designation : PE6P130A72ORS7150
EP type number : 0 412 636 808
Governor
Governor design. : RQV250...900PA881
Governor no. : 0 421 813 676

Customer-spec. information
Customer : PENTA

Engine : TAMD 162 (HD)

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 922 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 29.6...29.9

100 s: (29.3...30.3)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 250.0
Rack travel in mm : 3.7...3.9
Del.quantity cm3/ : 1.7...2.2
100 s: (1.4...2.4)
Spread cm3 : 0.5
100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.30
2nd speed rpm : 350
travel mm : 2.00...2.60
3rd speed rpm : 700
travel mm : 4.50...5.10
4th speed rpm : 925
travel mm : 7.60...7.80
5th speed rpm : 985
travel mm : 8.40...8.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 980
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 296.5...299.5
1000 : (293.0...303.0)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 9.30
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 975...1005
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 5.30
Speed rpm : 250
Rack travel in mm : 3.70...3.90

CONSTANT REGULATION
Speed rpm : 250...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.30...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.70...7.90
2nd pressure hPa : 310
Rack travel in m: 7.90...8.00
3rd pressure hPa : 660
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 192.5...195.5
1000 s: (189.0...199.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 925...935

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.70...3.90
Del.quantity cm³/ : 17.0...22.0
1000 s: (14.5...24.5)
Spread cm³ : 5.00
1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 L 4
 Edition : 18.12.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 909
 Injection pump
 Pump designation : PE6P120A320RS7138Z
 EP type number : 0 412 626 856
 Governor
 Governor design. : RQV200...1100PA712-5
 Governor no. : 0 421 813 951

Customer-spec. information
 Customer : SCANIA

Engine : DS9 07

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 15.0...15.2

100 s: (14.7...15.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.5...4.9

Del.quantity cm³/ : 1.2...1.6

100 s: (-)

Spread cm³ : 0.5

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 0.90...1.30

2nd speed rpm : 350

travel mm : 2.50...3.10

3rd speed rpm : 650

travel mm : 5.40...6.00

4th speed rpm : 1145

travel mm : 8.90...9.10

5th speed rpm : 1280

travel mm : 10.10...10.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 150.0...152.0

1000 : (147.0...155.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 10.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 250
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 310...370

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.80...11.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.30
2nd pressure hPa : 350
Rack travel in m: 11.50...11.60
3rd pressure hPa : 220
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 145.0...153.0
1000 s: (143.0...155.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 114.0...118.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 115.0...145.0
1000 s: (-)
Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.50...4.70

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 g
Edition : 31.01.92
Replaces : 21.8.91
Test oil : ISO-4113

Combination no. : 0 402 646 915

Injection pump
Pump designation : PE6P120A320LS7836
EP type number : 0 412 626 840
Governor
Governor design. : RQ300/1050PA972
Governor no. : 0 427 801 542

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del. quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del. quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.20...5.90
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 10.50...10.70
2nd pressure hPa : 500
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...144.0
1000 s: (129.0...147.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (-)
Rack travel in mm : 10.20...10.50

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 r
Edition : 31.01.92
Replaces : 5.7.91
Test oil : ISO-4113

Combination no. : 0 402 646 916

Injection pump
Pump designation : PE6P120A320LS7836
EP type number : 0 412 626 854
Governor
Governor design. : RGV300...1050PA797
-17
Governor no. : 0 421 813 884

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50

2nd speed rpm : 637
travel mm : 4.90...5.40

3rd speed rpm : 830
travel mm : 6.00...6.50

4th speed rpm : 1107
travel mm : 8.30...8.80

5th speed rpm : 1218
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 118...126

Testing:
1st rack travel in: 12.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.90

CONSTANT REGULATION
Speed rpm : 300...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.50...10.70
2nd pressure hPa : 500
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1050
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm³/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 r 4
 Edition : 31.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 916T3
 Injection pump
 Pump designation : PE6P120A320LS7836
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQV300...1050PA797
 -17
 Governor no. : 0 421 813 884
 Cust. part no. : T3

Customer spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del. quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 637

travel mm : 4.90...5.40

3rd speed rpm : 830

travel mm : 6.00...6.50

4th speed rpm : 1107

travel mm : 8.30...8.80

5th speed rpm : 1218

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125
Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h : 800
Del.quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.90

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.50...10.70
2nd pressure hPa : 500
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1050
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150

Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm³/ : 204.0...207.0
1000 s: (201.0...210.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 209.0...213.0
1000 s: (206.0...216.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm³ : 3.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o
Edition : 22.01.92
Replaces : 23.10.91
Test oil : ISO-4113

Combination no. : 0 402 646 917

Injection pump
Pump designation : PE6P120A320LS7834
EP type number : 0 412 626 841
Governor
Governor design. : RQ300/950PA971
Governor no. : 0 421 801 543

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
(5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm³/ : 22.7...22.9

100 s: (22.4...23.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity : 227.0...229.0

1000 : (224.0...232.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1100
Rack travel mm : 14.50...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 700
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1400
Rack travel in m: 14.60...14.80 *
4th pressure hPa : 1550
Rack travel in m: 14.90...15.10
5th pressure hPa : -
Rack travel in m: 10.00...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 950

Del.quantity cm3/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 243.0...247.0
1000 s: (240.0...250.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 30.0...55.0
1000 s: (-)
Rack travel in mm : 10.00...10.30

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,1 c
Edition : 22.01.92
Replaces : 28.6.91
Test oil : ISO-4113

Combination no. : 0 402 646 921

Injection pump
Pump designation : PE6P120A320LS7837
EP type number : 0 412 626 842
Governor
Governor design. : RQ300/1050PA972-3
Governor no. : 0 421 801 565

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 10.00...10.20
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1400
Rack travel in m: 15.20...15.40
5th pressure hPa : -
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 1050

Del.quantity cm3/ : 235.0...238.0
1000 s: (232.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.30...9.60

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Testing:

1st rack travel in: 13.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.40...7.00
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.10...14.30
3rd speed rpm : 800
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 9.90...10.10
2nd pressure hPa : 550
Rack travel in m: 12.50...12.70
3rd pressure hPa : 1100
Rack travel in m: 13.80...14.00 *
4th pressure hPa : 1250
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 219.0...223.0
1000 s: (216.0...226.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1090...1105

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

Note remarks

Combination no. : 0 402 645 924

Engine : OM401 LA

TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 5.20...5.30
                   : (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order      : 6- 3- 5- 2- 4- 1
```

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.50
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 950
Rack travel in m: 15.50...15.70
3rd speed rpm : 800
Rack travel in m: 15.60...15.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 10.00...10.20
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1450
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 950

Del.quantity cm3/ : 251.0...254.0
1000 s: (248.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.50
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.30...9.50

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ME 9,6 o 1
Edition : 22.01.92
Replaces : 24.4.91
Test oil : ISO-4113

Combination no. : 0 402 646 926

Injection pump
Pump designation : PE6P120A320LS7834
EP type number : 0 412 626 841
Governor
Governor design. : RQV300...950PA797-19
Governor no. : 0 421 813 901

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del. quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50

2nd speed rpm : 617
travel mm : 5.00...5.50

3rd speed rpm : 780
travel mm : 6.10...6.60

4th speed rpm : 1009
travel mm : 8.30...8.80

5th speed rpm : 1092
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1100
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 13.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.50...7.10

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : 0.40
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1100
Rack travel mm : 14.70...14.90

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.90...11.10
2nd pressure hPa : 700
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1400

EO8

Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1550
Rack travel in m: 15.10...15.30
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1800
Speed rpm : 950
Del.quantity cm³/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm³/ : 243.0...247.0
1000 s: (240.0...250.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o 3
 Edition : 22.01.92
 Replaces : 30.8.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 929
 Injection pump
 Pump designation : PE6P120A320LS7834
 EP type number : 0 412 626 841
 Governor
 Governor design. : RQV300...1050PA797
 -25
 Governor no. : 0 421 813 924

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del. quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...7.1

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50

2nd speed rpm : 608
 travel mm : 4.80...5.30

3rd speed rpm : 820
 travel mm : 5.90...6.40

4th speed rpm : 1108
 travel mm : 8.30...8.80

5th speed rpm : 1183
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1085

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1100
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Testing:
1st rack travel in: 13.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 87...92

Testing:
Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.50...7.10

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1100
Rack travel mm : 14.70...14.90

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.50...10.70
2nd pressure hPa : 700
Rack travel in m: 13.40...13.60

3rd pressure hPa : 1400
Rack travel in m: 14.90...15.00
4th pressure hPa : 1550
Rack travel in m: 15.10...15.30
5th pressure hPa : -
Rack travel in m: 10.00...10.30

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1800
Speed rpm : 1050
Del.quantity cm³/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm³/ : 243.0...247.0
1000 s: (240.0...250.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 13.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ME 9,6 c 4
 Edition : 24.01.92
 Replaces : 26.4.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 930
 Injection pump
 Pump designation : PE6P120A320LS7834
 EP type number : 0 412 626 841
 Governor
 Governor design. : RQ300/105CPA972-7
 Governor no. : 0 421 801 583

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...7.1

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.60
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1100
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.90...11.10
2nd pressure hPa : 700
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1400
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1550
Rack travel in m: 15.10...15.30
5th pressure hPa : -
Rack travel in m: 10.00...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 1050

Del.quantity cm3/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 243.0...247.0
1000 s: (240.0...250.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.00...10.30

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Combination no. : 0 402 646 939

1st version kW : 200.0
Rated speed : 1900

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 5.50...5.60
                  : (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order      : 6- 3- 5- 2- 4- 1
```

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
with governor

1st speed rpm : 300
travel mm : 1.00...1.50

```
2nd speed   rpm : 617
travel mm   : 5.00...5.50
```

```
3rd speed    rpm      : 780
travel mm    : 6.10...6.60
```

```
4th speed rpm : 1009
travel mm : 8.30...8.80
```

```
5th speed      rpm      : 1092
travel mm      : 9.80...10.30
```

Control-lever position
Degree: -1

Speed rpm : 1020
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 800
Del. quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.10
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 5.20...5.80

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : -
2nd speed rpm : 950
Rack travel in m: 13.10...13.30
3rd speed rpm : 800
Rack travel in m: 13.10...13.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.20...10.40
2nd pressure hPa : 500
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1000

E14

Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 950
Del. quantity cm³/ : 203.0...206.0
1000 s: (200.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del. quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 1
 Edition : 22.01.92
 Replaces : 26.7.91
 Test oil : ISO-4113

Combination no. : 0 402 646 940

Injection pump
 Pump designation : PE6P120A320LS7836
 EP type number : 0 412 626 840
 Governor
 Governor design. : RQ300/950PA971-7
 Governor no. : 0 421 801 580

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.10
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 600

1st pressure hPa : 500
Rack travel in m: 11.60...11.80
2nd pressure hPa : 1000
Rack travel in m: 12.60...12.80
3rd pressure hPa : 1150
Rack travel in m: 12.90...13.10
4th pressure hPa : -
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 203.0...206.0
1000 s: (200.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.30...10.60

Remarks:

:

Note remarks

Testing:
1st rack travel in: 14.70
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement
Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.80...10.00
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1450
Rack travel in m: 15.10...15.30
5th pressure hPa : -
Rack travel in m: 9.50...9.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1800
Speed rpm : 950
Del.quantity cm3/ : 251.0...254.0
1000 s: (248.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.70
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 6
 Edition : 22.01.92
 Replaces : 8.10.91
 Test oil : ISO-4113

Combination no. : 0 402 646 952

Injection pump
 Pump designation : PE6P120A320LS7836
 EP type number : 0 412 626 840
 Governor
 Governor design. : RQ300/1050PA972-8
 Governor no. : 0 421 801 626

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del.quantity cm3/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.30
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.20...10.40
2nd pressure hPa : 400
Rack travel in m: 11.10...11.30
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *
4th pressure hPa : -
Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 182.0...185.0
1000 s: (179.0...188.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.10...10.40

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 3
 Edition : 22.01.92
 Replaces : 5.7.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 953
 Injection pump
 Pump designation : PE6P120A320LS7836
 EP type number : 0 412 626 840
 Governor
 Governor design. : RQ300/950PA971-8
 Governor no. : 0 421 801 625

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del.quantity cm3/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.50
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1100
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.20...10.40
2nd pressure hPa : 400
Rack travel in m: 11.10...11.30
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *
4th pressure hPa : 1100
Rack travel in m: 12.20...12.40
5th pressure hPa : -
Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 187.0...190.0
1000 s: (184.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 190.0...194.0
1000 s: (187.0...197.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.10...10.40

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o 6
 Edition : 22.01.92
 Replaces : 29.11.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 954
 Injection pump
 Pump designation : PE6P120A320LS7834
 EP type number : 0 412 626 841
 Governor
 Governor design. : RQ300/1050PA993-5
 Governor no. : 0 421 801 610

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 9.90...10.10
2nd pressure hPa : 550
Rack travel in m: 12.50...12.70
3rd pressure hPa : 1100
Rack travel in m: 13.80...14.00 *
4th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 1050
Del.quantity cm3/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 219.0...223.0
1000 s: (216.0...226.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 r 2
 Edition : 22.01.92
 Replaces : 30.8.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 957
 Injection pump
 Pump designation : PE6P120A320LS7836
 EP type number : 0 412 626 840
 Governor
 Governor design. : RQV300...1050PA797
 -32
 Governor no. : 0 421 813 957

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del.quantity cm³/ : 16.4...16.6
 100 s: (16.1...16.9)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00
 2nd speed rpm : 830
 travel mm : 5.90...6.40
 3rd speed rpm : 1107
 travel mm : 8.10...8.60
 4th speed rpm : 1190
 travel mm : 9.80...10.30
 5th speed rpm : 1290
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1100
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 700
Del.quantity : 164.0...166.0
1000 : (161.0...169.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.30
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.30...10.50
2nd pressure hPa : 400
Rack travel in m: 11.10...11.30
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *
4th pressure hPa : 1100
Rack travel in m: 12.10...12.30
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 182.0...185.0
1000 s: (179.0...188.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 11.30
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 r 3
Edition : 22.01.92
Replaces : 30.8.91
Test oil : ISO-4113

Combination no. : 0 402 646 958

Injection pump
Pump designation : PE6P12DA320LS7836
EP type number : 0 412 626 840
Governor
Governor design. : RQV300...950PA797-33
Governor no. : 0 421 813 958

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del. quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50

2nd speed rpm : 780
travel mm : 6.10...6.60

3rd speed rpm : 1008
travel mm : 8.30...8.80

4th speed rpm : 1092
travel mm : 11.00...10.30

5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 700
Del.quantity : 164.0...166.0
1000 : (161.0...169.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 114...122

Testing:

1st rack travel in: 11.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.30...10.50
2nd pressure hPa : 400
Rack travel in m: 11.10...11.30
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *
4th pressure hPa : 1100
Rack travel in m: 12.10...12.30
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

E28

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 187.0...190.0
1000 s: (184.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 189.0...193.0
1000 s: (186.0...196.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 g 4
Edition : 22.01.92
Replaces : 30.8.91
Test oil : ISO-4113

Combination no. : 0 402 646 959

Injection pump
Pump designation : PE6P120A320LS7836
EP type number : 0 412 626 840
Governor
Governor design. : RQ300/1050PA993-6
Governor no. : 0 421 801 616

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.80
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.20...10.40
2nd pressure hPa : 500
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)

F02

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ME 9,6 q 8
Edition : 22.01.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 960

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : R0300/950PA993-7
Governor no. : 0 421 801 617

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.80

Measurement

Speed 1/min : 600

1st pressure hPa : 500
Rack travel in m: 11.60...11.80
2nd pressure hPa : 1050
Rack travel in m: 12.60...12.80
3rd pressure hPa : 1150
Rack travel in m: 12.90...13.10
4th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 203.0...206.0
1000 s: (200.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800

FD4

Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L3
 Edition : 22.01.92
 Replaces : 22.11.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 963
 Injection pump
 Pump designation : PE6P120A320RS7218Y
 EP type number : 0 412 626 859
 Governor
 Governor design. : RQ250/1000PA936-1
 Governor no. : 0 421 801 508

Customer-spec. information
 Customer : DAF

Engine : WS 242 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
 : (5.25...5.45)
 Rack travel in mm : 13.70...14.70

F05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 14.30...14.40
 Del.quantity cm3/ : 21.3...21.5
 100 s: (21.0...21.8)
 Spread cm3 : 0.5
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 6.6...7.0
 Del.quantity cm3/ : 2.4...3.0
 100 s: (2.1...3.3)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 550
 Rack travel in mm : 15.80...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1000
 Del.quantity : 213.0...215.0
 1000 : (210.0...218.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 550
 Rack travel in mm : 16.4

Testing:

1st rack travel in: 13.30
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.30...15.40
2nd speed rpm : 1000
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 420
Rack travel in m: 13.80...13.90
3rd pressure hPa : 310
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L7
Edition : 22.01.92
Replaces : 22.11.91
Test oil : ISO-4113

Combination no. : 0 402 646 963T3

Injection pump
Pump designation : PE6P120A32DRS7218Y
EP type number : 0 412 626 859
Governor
Governor design. : RG250/1000PA936-1
Governor no. : 0 421 801 508

Cust. part no. : T3

Customer-spec. information
Customer : DAF

Engine : WS 242 G

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 13.70...14.70
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.80...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 215.0...217.0
1000 : (212.0...220.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 550
Rack travel in mm : 16.4

Testing:
1st rack travel in: 13.30
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.30...15.40
2nd speed rpm : 1000
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.30...14.40

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 420
Rack travel in m: 13.80...13.90
3rd pressure hPa : 310
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm³/ : 167.0...169.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L4
 Edition : 22.01.92
 Replaces : 22.11.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 964
 Injection pump
 Pump designation : PE6P120A320RS7218Y
 EP type number : 0 412 626 859
 Governor
 Governor design. : RQV250...1000PAS/39
 Governor no. : 0 421 813 829

Customer-spec. information
 Customer : DAF

Engine : WS 242 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values —

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
 : (5.25...5.45)
 Rack travel in mm : 13.70...14.70

F09

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 14.30...14.40

Del.quantity cm³/ : 21.3...21.5
 100 s: (21.0...21.8)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 6.6...7.0
 Del.quantity cm³/ : 2.4...3.0
 100 s: (2.1...3.3)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 7.80...8.00
 2nd speed rpm : 250
 travel mm : 0.70...1.10
 3rd speed rpm : 400
 travel mm : 2.50...3.10
 4th speed rpm : 700
 travel mm : 4.50...4.90
 5th speed rpm : 1350
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 213.0...215.0
1000 : (210.0...218.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 13.30
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 77...85

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 270...380

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 420
Rack travel in m: 13.80...13.90
3rd pressure hPa : 310
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

F10

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1st rack travel less than

full load rack tr: 13.30
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L8
 Edition : 22.01.92
 Replaces : 22.11.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 964
 Injection pump
 Pump designation : PE6P120A320RS7218Y
 EP type number : 0 412 626 859
 Governor
 Governor design. : RQV250...1000PA939
 Governor no. : 0 421 813 829

Cust. part no. : T3

Customer-spec. information
 Customer : DAF

Engine : WS 242 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 668 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
 : (5.25...5.45)
 Rack travel in mm : 13.70...14.70
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.30...14.40

Del. quantity cm³/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 7.80...8.00

2nd speed rpm : 250
 travel mm : 0.70...1.10

3rd speed rpm : 400
 travel mm : 2.50...3.10

4th speed rpm : 700
 travel mm : 4.50...4.90

5th speed rpm : 1350
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850
Aneroid pressure h: 1000
Del. quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 117...125

Testing:

1st rack travel in: 13.30
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 77...85

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 270...380

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 420
Rack travel in m: 13.80...13.90
3rd pressure hPa : 310
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm3/ : 167.0...169.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o 8
 Edition : 22.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 965
 Injection pump
 Pump designation : PE6P120A320LS7834-1
 EP type number : 0 412 626 857
 Governor
 Governor design. : RQV350...1050PA866
 -19
 Governor no. : 0 421 813 979

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA, Euro 1

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.55)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm³/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...6.0

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80

2nd speed rpm : 570
 travel mm : 3.30...3.80

3rd speed rpm : 900
 travel mm : 5.40...5.90

4th speed rpm : 1107
 travel mm : 7.80...8.30

5th speed rpm : 1204
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 207.0...209.0
1000 : (204.0...212.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 13.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.40...6.00

CONSTANT REGULATION
Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.90...11.10
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1350
Rack travel in m: 14.40...14.60
4th pressure hPa : -
Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 225.0...228.0
1000 s: (222.0...231.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 r 5
 Edition : 18.12.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 966
 Injection pump
 Pump designation : PE6P120A320LS7836-1
 EP type number : 0 412 626 860
 Governor
 Governor design. : RQV350...1050PA866
 -20
 Governor no. : 0 421 813 980

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA, Euro 1

1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 638 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.55)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del. quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...6.2

Del. quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80

2nd speed rpm : 570
 travel mm : 3.30...3.80

3rd speed rpm : 900
 travel mm : 5.40...5.90

4th speed rpm : 1107
 travel mm : 7.80...8.30

5th speed rpm : 1204
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 115...123

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.10...5.70

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 11.30...11.50
2nd pressure hPa : 1000
Rack travel in m: 12.60...12.80
3rd pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm³/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 16,2 b3
 Edition : 24.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 967
 Injection pump
 Pump designation : PE6P130A720RS7150
 EP type number : 0 412 636 808
 Governor
 Governor design. : RQV250...900PA881-1
 Governor no. : 0 421 813 982

Customer-spec. information
 Customer : PENTA

Engine : TAMD 162 A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 922 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 33.4...33.7

100 s: (33.1...34.1)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 250.0

Rack travel in mm : 3.7...3.9

Del.quantity cm³/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm³ : 0.5

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.90...1.30

2nd speed rpm : 350
 travel mm : 2.00...2.60

3rd speed rpm : 700
 travel mm : 4.50...5.10

4th speed rpm : 925
 travel mm : 7.60...7.80

5th speed rpm : 985
 travel mm : 8.40...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 980

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 334.5...337.5

1000 : (331.0...341.0)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 10.00
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 975...1005
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 5.30
Speed rpm : 250
Rack travel in mm : 3.70...3.90

CONSTANT REGULATION
Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 675
Rack travel in m: 10.70...10.80
3rd pressure hPa : 400
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 226.5...229.5
1000 s: (223.0...233.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 925...935

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.70...3.90
Del.quantity cm³/ : 17.0...22.0
1000 s: (14.5...24.5)
Spread cm³ : 5.00
1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o
Edition : 24.01.92
Replaces : 27.9.91
Test oil : ISO-4113

Combination no. : 0 402 648 893

Injection pump
Pump designation : PE8P120A320LS7835
EP type number : 0 412 628 847
Governor
Governor design. : RQ300/950PA971-2
Governor no. : 0 421 801 548

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 450
Rack travel in m: 10.90...11.20
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1200
Rack travel in m: 14.20...14.40 *
4th pressure hPa : -
Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm3/ : 216.0...219.0
1000 s: (213.0...222.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 750
Del.quantity cm3/ : 234.0...238.0
1000 s: (231.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)
Rack travel in mm : 10.10...10.40

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 1
 Edition : 31.01.92
 Replaces : 27.9.91
 Test oil : ISO-4113
 Combination no. : 0 402 648 894
 Injection pump
 Pump designation : PE8P120A320LS7835
 EP type number : 0 412 628 847
 Governor
 Governor design. : RGV300...950PA797-18
 Governor no. : 0 421 813 886

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm³/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 567

travel mm : 4.40...4.90

3rd speed rpm : 780

travel mm : 6.10...6.60

4th speed rpm : 1009

travel mm : 8.30...8.80

5th speed rpm : 1092

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 980

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 122...130

Testing:
1st rack travel in: 12.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Control Lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION
Speed rpm : 250...360

TORQUE CONTROL
Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00

3rd pressure hPa : 1200
Rack travel in m: 14.20...14.40 *
4th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm3/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 750
Del.quantity cm3/ : 234.0...238.0
1000 s: (231.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 2
 Edition : 31.01.92
 Replaces : 21.8.91
 Test oil : ISO-4113
 Combination no. : 0 402 648 895
 Injection pump
 Pump designation : PE8P120A320LS7835
 EP type number : 0 412 628 847
 Governor
 Governor design. : RQ300/1050PA972-1
 Governor no. : 0 421 801 545

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time, to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.40

Del. quantity cm³/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del. quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.80
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 13.80...14.00
3rd speed rpm : 800
Rack travel in m: 14.50...14.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600
1st pressure hPa : 250
Rack travel in m: 10.80...11.10
2nd pressure hPa : 650
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1200
Rack travel in m: 14.30...14.40
4th pressure hPa : -
Rack travel in m: 9.30...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 30.0...40.0
1000 s: (26.0...44.0)
Rack travel in mm : 9.10...9.40

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 v 2
 Edition : 31.01.92
 Replaces : 21.6.91
 Test oil : ISO-4113
 Combination no. : 0 402 648 899
 Injection pump
 Pump designation : PE8P120A320LS7839
 EP type number : 0 412 628 849
 Governor
 Governor design. : RQ300/950PA971-5
 Governor no. : 0 421 801 559

Customer-spec. information

Engine : OM442 LA
 1st version kW : 370.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 14.90...15.10
 Del.quantity cm3/ : 25.6...25.8
 100 s: (25.3...26.1)
 Spread cm3 : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1050
 Del.quantity : 256.0...258.0
 1000 : (253.0...261.0)
 Spread cm3 : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.30
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 6.00...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.20...10.40
2nd pressure hPa : 800
Rack travel in m: 14.00...14.20
3rd pressure hPa : 1300
Rack travel in m: 15.20...15.30 *
4th pressure hPa : 1600
Rack travel in m: 15.80...16.00
5th pressure hPa : -
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 950
Del.quantity cm3/ : 279.0...282.0
1000 s: (276.0...285.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm3/ : 283.0...287.0
1000 s: (280.0...290.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 15.30
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.30...9.60

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 v
Edition : 22.01.92
Replaces : 23.10.91
Test oil : ISO-4113

Combination no. : 0 402 648 902

Injection pump
Pump designation : PE8P120A320LS7839
EP type number : 0 412 628 849
Governor
Governor design. : RQ300/1050PA972-5
Governor no. : 0 421 801 564

Customer-spec. information

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

F27

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.10...15.30

Del.quantity cm³/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del.quantity : 256.0...258.0

1000 : (253.0...261.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.30...16.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 9.70...9.90
2nd pressure hPa : 800
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1300
Rack travel in m: 14.70...14.80 *
4th pressure hPa : 1600
Rack travel in m: 15.30...15.50
5th pressure hPa : -
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050

Del.quantity cm³/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm³/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.30...9.60

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 v 1
Edition : 24.01.92
Replaces : 29.11.91
Test oil : ISO-4113

Combination no. : 0 402 648 907

Injection pump
Pump designation : PE8P120A320LS7839
EP type number : 0 412 628 849
Governor
Governor design. : RQV300...950PA797-22
Governor no. : 0 421 813 909

Customer spec. information

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

G01

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.00...15.20

Del.quantity cm3/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50
2nd speed rpm : 617
travel mm : 5.00...5.50
3rd speed rpm : 780
travel mm : 6.10...6.60
4th speed rpm : 1010
travel mm : 8.30...8.80
5th speed rpm : 1092
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1020
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 1050
Del.quantity : 256.0...258.0
1000 : (253.0...261.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 15.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 15.00...15.20

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1300
Rack travel in m: 15.20...15.40
4th pressure hPa : 1600
Rack travel in m: 15.80...16.00
5th pressure hPa : -
Rack travel in m: 9.20...9.50

START CUT-OUT

G02

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2100
Speed rpm : 950
Del.quantity cm³/ : 279.0...282.0
1000 s: (276.0...285.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2100
Speed rpm : 800
Del.quantity cm³/ : 286.0...290.0
1000 s: (283.0...286.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 3
 Edition : 22.01.92
 Replaces : 26.4.91
 Test oil : ISO-4113
 Combination no. : 0 402 648 914
 Injection pump
 Pump designation : PE8P120A320LS7835
 EP type number : 0 412 628 847
 Governor
 Governor design. : RGV300...1050PA797
 -30
 Governor no. : 0 421 813 921

Customer-spec. information

Engine : OM402 A
 1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 14.80...15.00
 Del. quantity cm³/ : 22.5...22.7
 100 s: (22.2...23.0)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 6.2...6.8
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00
 2nd speed rpm : 625
 travel mm : 4.80...5.30
 3rd speed rpm : 830
 travel mm : 5.90...6.40
 4th speed rpm : 1108
 travel mm : 8.10...8.60
 5th speed rpm : 1190
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 13.30
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 14.30...14.50
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.80...15.00

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.00...10.20
2nd pressure hPa : 650
Rack travel in m: 13.60...13.80

3rd pressure hPa : 1200
Rack travel in m: 14.90...15.00 *
4th pressure hPa : -
Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 13.30
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 4
Edition : 22.01.92
Replaces : 8.10.91
Test oil : ISO-4113

Combination no. : 0 402 648 915

Injection pump
Pump designation : PE8P120A320LS7835
EP type number : 0 412 628 847
Governor
Governor design. : RQ300/1050PA993-1
Governor no. : 0 421 801 582

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.80...15.00

Del.quantity cm³/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.70
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.70...14.90
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.80...15.00

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.00...10.20
2nd pressure hPa : 650
Rack travel in m: 13.60...13.80
3rd pressure hPa : 1200
Rack travel in m: 14.90...15.00 *
4th pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 v 5
Edition : 22.01.92
Replaces : 23.10.91
Test oil : ISO-4113

Combination no. : 0 402 648 921

Injection pump
Pump designation : PE8P120A320LS7839
EP type number : 0 412 628 849
Governor
Governor design. : RQ300/950PA993-8
Governor no. : 0 421 801 618

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.00...15.20

Del.quantity cm3/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del.quantity : 256.0...258.0

1000 : (253.0...261.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.40

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1075...1105

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.3

Testing:

Speed rpm : 200

Minimum rack travel: 7.60

Speed rpm : 300

Rack travel in mm : 6.00...6.60

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1050

Rack travel mm : 15.00...15.20

Measurement

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 10.00...10.20

2nd pressure hPa : 800

Rack travel in m: 13.80...14.00

3rd pressure hPa : 1300

Rack travel in m: 15.20...15.40

4th pressure hPa : 1600

Rack travel in m: 15.20...15.40

5th pressure hPa : -

Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2100

Speed rpm : 950

Del.quantity cm3/ : 279.0...282.0

1000 s: (276.0...285.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 2100

Speed rpm : 800

Del.quantity cm3/ : 286.0...290.0

1000 s: (283.0...293.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 144.0...146.0

1000 s: (141.0...149.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.40

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 260.0...280.0

1000 s: (256.0...284.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 x 1
Edition : 18.12.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 925

Injection pump
Pump designation : PE8P120A320LS7843
EP type number : 0 412 628 859
Governor
Governor design. : RQV350...950PA866-18
Governor no. : 0 421 813 963

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.40

Del. quantity cm³/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...6.1

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.30...1.80

2nd speed rpm : 424
travel mm : 2.30...2.80

3rd speed rpm : 700
travel mm : 4.10...4.60

4th speed rpm : 1009
travel mm : 7.90...8.40

5th speed rpm : 1220
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 222.0...224.0
1000 : (219.0...227.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control Lever
position degrees: 120...128

Testing:

1st rack travel in: 13.80
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1050...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 350
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

2nd speed rpm : 950
Rack travel in m: 14.80...15.00
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.20...10.40
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1100

G10

Rack travel in m: 14.50...14.70
4th pressure hPa : 1200
Rack travel in m: 15.10...15.30
5th pressure hPa : -
Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/ : 243.0...245.0
1000 s: (240.0...248.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 255.0...259.0
1000 s: (252.0...262.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 125.0...127.0
1000 s: (122.0...130.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 u 4
Edition : 22.01.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 926

Injection pump
Pump designation : PE8P120A320LS7840
EP type number : 0 412 628 850
Governor
Governor design. : RQ300/1050PA972-9
Governor no. : 0 421 801 632

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.50...12.70

Del. quantity cm³/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del. quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.50...12.70

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 13.10...13.30
2nd pressure hPa : 440
Rack travel in m: 11.90...12.10
3rd pressure hPa : 920
Rack travel in m: 12.70...12.90
4th pressure hPa : -
Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 1050
Del.quantity cm3/ : 210.0...213.0
1000 s: (207.0...216.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 800
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 u 5
 Edition : 22.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 927
 Injection pump
 Pump designation : PE8P120A320LS7840
 EP type number : 0 412 628 850
 Governor
 Governor design. : RQV300...1050PA797
 -36
 Governor no. : 0 421 813 984

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.50...12.70

Del.quantity cm3/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.60

2nd speed rpm : 470
 travel mm : 3.00...3.50

3rd speed rpm : 830
 travel mm : 5.90...6.40

4th speed rpm : 1110
 travel mm : 8.20...8.70

5th speed rpm : 1183
 travel mm : 9.60...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1030

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 700
Del.quantity : 188.0...190.0
1000 : (185.0...193.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Speed rpm : 380...420

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.60...12.80

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.30...11.50
2nd pressure hPa : 900
Rack travel in m: 12.80...13.00
3rd pressure hPa : -
Rack travel in m: 10.60...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 1030
Del.quantity cm³/ : 210.0...213.0
1000 s: (207.0...216.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 800
Del.quantity cm³/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 h
Edition : 31.07.90
Replaces : 1.9.89
Test oil : ISO-4113

Combination no. : 0 402 649 809

Injection pump
Pump designation : PE10P120A520LS7825
EP type number : 0 412 629 805
Governor
Governor design. : RQV250...1150PA902-3
Governor no. : 0 421 813 761

Customer-spec. information
Customer : MAN

Engine : D 2840 LXE

1st version kW : 603.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 10- 9- 4- 1- 8- 7-
6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 28.4...28.6

100 s: (28.1...28.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500
Rack travel in mm : 8.80...9.00
Del.quantity cm3/ : 14.9...15.1
100 s: (14.6...15.4)

Spread cm3 : 0.8
100 s: (1.2)

3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.2...6.0 **
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.10

2nd speed rpm : 450
travel mm : 2.90...3.50

3rd speed rpm : 750
travel mm : 5.50...5.90

4th speed rpm : 1150
travel mm : 9.20...9.40

5th speed rpm : 1400
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1225
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
 Aneroid pressure h: 1300
 Del.quantity : 284.0...286.0
 1000 : (281.0...289.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 118...126

Testing:

1st rack travel in: 12.00
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00
 Speed rpm : 1285...1315
 4th rack travel in: 1450
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 76...84

Testing:

Speed rpm : 100
 Minimum rack trave: 8.90
 Speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Rack travel in mm : 2.00
 Speed rpm : 430...490

Aneroid/Altitude
 Compensator Test

1st version

Setting
 Speed rpm : 500
 Pressure hPa : 1300
 Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
 Rack travel in m: 8.80...9.00
 2nd pressure hPa : 100
 Rack travel in m: 9.30...9.40
 3rd pressure hPa : 470
 Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 149.0...151.0
 1000 s: (146.0...154.0)
 Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
 Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 100.0...120.0**
 1000 s: (-)

Speed rpm : 100
 Del.quantity cm3/ : 0 *
 1000 s: (-)
 Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version

Speed rpm : 500
 Rack travel in mm : 0.00...7.00
 Del.quantity cm3/ : 0 *
 1000 s: (-)

2nd version

Speed rpm : 500
 Rack travel in mm : 0.00...7.50
 Del.quantity cm3/ : 0.0...50.0
 1000 s: (-)

3rd version

Speed rpm : 500
 Rack travel in mm : 8.10...8.30
 Del.quantity cm3/ : 125.0...
 1000 s: (-)

LOW IDLE

Speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Del.quantity cm3/ : 52.0...60.0 **
 1000 s: (-)

Remarks:

: MAN-NR. 2-7961

* applies to cylinders 1, 2, 3, 7 and 9

** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 t
 Edition : 18.12.91
 Replaces : --
 Test oil : ISO-4113
 Combination no. : 0 402 676 811
 Injection pump
 Pump designation : PE6P120A320LS7834-1
 EP type number : 0 412 626 857
 Governor
 Governor design. : RSV675...1050POA826
 --2
 Governor no. : 0 421 833 366

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 401 LA

1st version kW : 205.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 19.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 22.1...22.3

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 675.0

Rack travel in mm : 3.4...4.0

Del.quantity cm3/ : 1.6...2.2

100 s: (-)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 221.0...223.0

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 85...93

Testing:

1st rack travel in: 13.10
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1100...1118
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 675
Rack travel in mm : 3.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 675
Rack travel in mm : 3.40...4.00
Rack travel in mm : 2.00
Speed rpm : 680...720

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.10
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 240.0...260.0
1000 s: (-)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 g 2
Edition : 05.03.90
Replaces : 1.12.89
Test oil : ISO-4113

Combination no. : 0 402 678 804

Injection pump
Pump designation : PE8P12DA320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RSV350...750POA825-4
Governor no. : 0 421 833 261

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 255.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.70...15.80

Del.quantity cm³/ : 24.1...24.3
100 s: (23.8...24.6)

Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.8
Del.quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 241.0...243.0
1000 : (238.0...246.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 74...82

Testing:

1st rack travel in: 14.70
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 1135...1150
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 60...68
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 15.00
Speed rpm : 350
Rack travel in mm : 5.40...5.80
Rack travel in mm : 2.00
Speed rpm : 350...410

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL

2nd speed rpm : 900
Rack travel in m: 13.20...13.40
3rd speed rpm : 1000
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del. quantity cm³/ : 246.0...252.0
1000 s: (243.0...255.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.70
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 f
 Edition : 31.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 735 806
 Injection pump
 Pump designation : PES5P120A720/3LS7250
 EP type number : 0 412 725 809
 Governor
 Governor design. : RQV325...1000PA960-8
 K
 Governor no. : 0 421 815 308

Customer spec. information
 Customer : MAN

Engine : D2865LFU3

1st version kW : 235.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

G22

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 26.6...26.8

100 s: (26.3...27.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 6.0...6.4

Del. quantity cm³/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1055

travel mm : 10.40...10.60

2nd speed rpm : 325

travel mm : 2.40...2.60

3rd speed rpm : 500

travel mm : 3.40...4.00

4th speed rpm : 750

travel mm : 6.80...7.20

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650
Aneroid pressure h : 1200
Del.quantity : 266.0...268.0
1000 : (263.0...271.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 293...301

Testing:

1st rack travel in: 11.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 249...257

Testing:

Speed rpm : 100
Minimum rack trave: 7.70
Speed rpm : 325
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.90...13.00
2nd speed rpm : 900
Rack travel in m: 13.30...13.50
3rd speed rpm : 650
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.30...13.50

Measurement

G23

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 9.20...9.40
2nd pressure hPa : 170
Rack travel in m: 9.40...9.50
3rd pressure hPa : 600
Rack travel in m: 11.90...12.10

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 900
Del.quantity cm³/ : 261.0...265.0
1000 s: (258.0...268.0)
Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 243.5...246.5
1000 s: (240.5...249.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.00...6.40
Del.quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7201

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5

start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 y
 Edition : 18.01.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 801
 Injection pump
 Pump designation : PES6P110A120RS7186
 EP type number : 0 412 716 800
 Governor
 Governor design. : RQV350...1250PA924-1
 K
 Governor no. : 0 421 815 226

Customer-spec. information
 Customer : CDC

Engine : 6BTA

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 047

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 13.7...13.9

100 s: (13.4...14.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...4.8

Del.quantity cm3/ : 3.0...3.6

100 s: (2.8...3.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.10...1.50

2nd speed rpm : 550
 travel mm : 3.70...4.30

3rd speed rpm : 900
 travel mm : 6.20...6.80

4th speed rpm : 1300
 travel mm : 9.70...9.90

5th speed rpm : 1375
 travel mm : 10.40...10.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1375

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 137.0...139.0
1000 : (134.0...142.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 9.50
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1360...1390
4th rack travel in: 1480
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19
Speed rpm : 350
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 10.50...10.60
2nd speed rpm : 1100
Rack travel in m: 10.30...10.40
3rd speed rpm : 900
Rack travel in m: 10.10...10.30
4th speed rpm : 650
Rack travel in m: 0.00...9.85

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1250
Pressure hPa : 900
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 6.70...7.10
2nd pressure hPa : 200
Rack travel in m: 7.40...7.50
3rd pressure hPa : 330
Rack travel in m: 8.40...8.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 86.0...90.0
1000 s: (84.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1290...1300

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 30.0...36.0
1000 s: (28.0...38.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Bow dimension:

Sliding-sleeve position = 37.0 mm
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r
Edition : 18.12.91
Replaces : 22.11.91
Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump
Pump designation : PES6P110A120RS7214
EP type number : 0 412 716 805
Governor
Governor design. : RQV350...1100PA964-1
K
Governor no. : 0 421 815 253

Customer-spec. information
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 115...125

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.70...15.80

Del.quantity cm3/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.80...2.00

2nd speed rpm : 450
travel mm : 3.10...3.50

3rd speed rpm : 600
travel mm : 5.10...5.50

4th speed rpm : 1000
travel mm : 8.10...8.30

5th speed rpm : 1200
travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1500
Del.quantity : 206.0...208.0
1000 : (203.0...211.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 64...72

Testing:

1st rack travel in: 14.40
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1300...1330
3rd rack travel in: 4.00
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:

Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 15.70...15.80
2nd speed rpm : 650
Rack travel in m: 13.20...13.60
3rd speed rpm : 1100
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 1050
Pressure hPa : 1500
Rack travel mm : 15.70...15.80

Measurement

Speed 1/min : 1050

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 335
Rack travel in m: 10.10...10.20
3rd pressure hPa : 845
Rack travel in m: 13.60...14.00

G28

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 650
Del.quantity cm3/ : 187.5...193.5
1000 s: (184.5...196.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 91.0...95.0
1000 s: (89.0...97.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 11.00...12.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: C.D.C # 3916627

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 4
 Edition : 18.12.91
 Replaces : 22.11.91
 Test oil : ISO-4113

Combination no. : 0 402 736 813

Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1100PA964-5
 K
 Governor no. : 0 421 315 257

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 18.6...18.8
 100 s: (18.3...19.1)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.7...3.3
 100 s: (2.5...3.5)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 450
 travel mm : 3.10...3.50

3rd speed rpm : 600
 travel mm : 5.10...5.50

4th speed rpm : 1000
 travel mm : 8.10...8.30

5th speed rpm : 1200
 travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1500
 Del.quantity : 186.5...188.5
 1000 : (183.5...191.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.50
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.50...14.60
2nd speed rpm : 650
Rack travel in m: 13.50...13.70
3rd speed rpm : 500
Rack travel in m: 12.90...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1500
Rack travel mm : 14.50...14.60

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 335
Rack travel in m: 10.10...10.20
3rd pressure hPa : 845
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 650
Del.quantity cm³/ : 198.0...204.0
1000 s: (195.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 91.0...95.0
1000 s: (89.0...97.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.80...11.80

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3916628

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 5
 Edition : 18.12.91
 Replaces : 22.11.91
 Test oil : ISO-4113
 Combination no. : 0 402 736 815
 Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1000PA964-7
 K
 Governor no. : 0 421 815 259

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 194.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm³/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.60...1.80

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 600

travel mm : 5.20...5.60

4th speed rpm : 1000

travel mm : 8.40...8.60

5th speed rpm : 1150

travel mm : 9.80...10.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1500

Del.quantity : 217.0...219.0

1000 : (214.0...222.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 14.30
Speed rpm : 1050...1060
2nd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.80...15.90
2nd speed rpm : 650
Rack travel in m: 14.00...14.40
3rd speed rpm : 1000
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1500
Rack travel mm : 15.80...15.90

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 335
Rack travel in m: 10.10...10.20
3rd pressure hPa : 845
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 650
Del.quantity cm³/ : 211.0...217.0
1000 s: (208.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 91.0...95.0
1000 s: (89.0...97.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.30
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.90...11.90

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : C.D.C. # 3916629

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

Note remarks

Combination no. : 0 402 736 822

Customer-spec. information
Customer : MAN

1st version kW : 309.0
Rated speed : 2000

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Test nozzle holder
assembly : 1 638 901 105

Opening
pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 4.80...4.90
                   : (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order      : 6- 2- 4- 1- 5- 3
```

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

betw. rack trav. m: 3.90...4.10
& maximum rack tra: 15.0...16.0
Difference * CS : 1.75...3.25

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 28.6...28.8

100 s: (28.3...29.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.7

Del.quantity cm3/ : 2.0...2.6
100 s: (1.7...2.9)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

1st speed rpm : 1045
travel mm : 8.40...8.60

```

2nd speed    rpm    : 300
   travel mm  : 2.10...2.30

```

```
3rd speed    rpm    : 500
  travel mm   : 4.10...4.50
```

```
4th speed rpm : 900
travel mm : 6.50...6.90
```

```
5th speed    rpm      : 1350
travel mm    : 13.00...14.00
```

Control-lever position

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750
Aneroid pressure h: 1300
Del.quantity : 286.0...288.0
1000 : (283.0...291.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 285...293

Testing:

1st rack travel in: 12.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 239...247

Testing:

Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 12.70...12.80
2nd speed rpm : 900
Rack travel in m: 13.10...13.30
3rd speed rpm : 1000
Rack travel in m: 13.00...13.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1300
Rack travel mm : 13.00...13.20

Measurement

H06

Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 8.40...8.60
2nd pressure hPa : 200
Rack travel in m: 8.70...8.80
3rd pressure hPa : 660
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 1000
Del.quantity cm³/ : 275.0...281.0
1000 s: (272.0...284.0)
Aneroid pressure h: 1300
Speed rpm : 900
Del.quantity cm³/ : 286.0...292.0
1000 s: (283.0...295.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.30...4.70
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7129

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6

start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 z
Edition : 31.01.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 736 827

Injection pump
Pump designation : PES6P120A720/3LS7251
EP type number : 0 412 726 860
Governor
Governor design. : RQV300...1000PA960-6
K
Governor no. : 0 421 815 306

Customer-spec. information
Customer : MAN

Engine : D2866LF06

1st version kW : 309.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

H08

Prestroke mm : 4.80...4.90
(4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
& maximum rack tra: 15.0...16.0
Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 28.5...28.7

100 s: (28.2...29.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.6

Del.quantity cm3/ : 2.9...3.5

100 s: (2.6...3.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1055
travel mm : 10.40...10.60

2nd speed rpm : 300
travel mm : 1.90...2.30

3rd speed rpm : 500
travel mm : 3.50...4.10

4th speed rpm : 750
travel mm : 6.80...7.20

5th speed rpm : 1350
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h : 1200
Del.quantity : 285.0...287.0
1000 : (282.0...290.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 296...304

Testing:

1st rack travel in: 12.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 251...259

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 12.70...12.90
4th speed rpm : 400
Rack travel in m: 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.50...13.60

H09

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 220
Rack travel in m: 9.40...9.50
3rd pressure hPa : 720
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 261.0...265.0
1000 s: (258.0...268.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.60
Del.quantity cm3/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7205

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery



Note remarks

Combination no. : 0 402 736 828

Customer-spec. information
Customer : MAN

1st version kW : 309.0
Rated speed : 2000

Test oil
inlet temp. °C : 38...42

overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

H11

```
Prestroke mm      : 4.80...4.90
                   : (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order      : 6- 2- 4- 1- 5- 3
```

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

betw. rack trav. m: 4.40...4.60
& maximum rack tra: 15.0...16.0
Difference * CS : 1.75...3.25

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 29.9...30.1

100 s: (29.6...30.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.6

Del.quantity cm3/ : 2.9...3.5
100 s: (2.6...3.8)

Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

```
1st speed    rpm    : 1055
  travel mm   : 10.40...10.60
```

```
2nd speed      rpm      : 300
travel mm      : 2.00...2.40
```

```
3rd speed      rpm      : 450
travel mm      : 3.30...4.00
```

```
4th speed rpm : 750
travel mm      : 6.80...7.20
```

```
5th speed      rpm      : 1350
travel mm      : 13.00...14.00
```

GUIDE SLEEVE POSITION

Control-Lever position

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 299.0...301.0
1000 : (296.0...304.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 296...304

Testing:

1st rack travel in: 12.40
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 251...259

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 300...420

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.90...14.00
2nd speed rpm : 1000
Rack travel in m: 13.40...13.60
3rd speed rpm : 750
Rack travel in m: 12.90...13.10
4th speed rpm : 400
Rack travel in m: 12.00...12.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.90...14.00

H12

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 220
Rack travel in m: 9.40...9.50
3rd pressure hPa : 720
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 281.0...287.0
1000 s: (278.0...290.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 168.0...170.0
1000 s: (165.0...173.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.60
Del.quantity cm³/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7207

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 d
Edition : 13.12.89
Replaces : 4.11.88
Test oil : ISO-4113

Combination no. : 0 402 746 843

Injection pump
Pump designation : PES6P120A720LS7161
EP type number : 0 412 726 817
Governor
Governor design. : RG300/1050PA897
Governor no. : 0 421 801 452

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.6

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.50...13.70
2nd speed rpm : 750
Rack travel in m: 14.80...15.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.10...13.30
3rd pressure hPa : 800
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

H15

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 218.0...222.0
1000 s: (215.0...225.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note Remarks

Test sheet : RVI 12,0 i
Edition : 24.01.92
Replaces : 3.6.91
Test oil : ISO-4113
Combination no. : 0 402 746 878
Injection pump
Pump designation : PES6P120A320RS7191
EP type number : 0 412 726 828
Governor
Governor design. : RGV275...1000PA927
Governor no. : 0 421 813 808

Customer-spec. information
Customer : RVI

Engine : MIDR 06-35-40

1st version kW : 314.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.93
: (4.75...4.95)
Rack travel in mm : 12.50...13.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 28.7...28.9

100 s: (28.4...29.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.5...4.9

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.10...1.50

2nd speed rpm : 500
travel mm : 3.60...4.20

3rd speed rpm : 700
travel mm : 5.50...5.90

4th speed rpm : 1000
travel mm : 7.60...7.80

5th speed rpm : 1400
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 287.5...289.5

1000 : (284.5...292.5)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 300...308

Testing:

1st rack travel in: 13.00
Speed rpm : 1065...1075
2nd rack travel in: 10.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 245...253

Testing:

Speed rpm : 200
Minimum rack travel: 5.90
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 330...430

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.50...9.90

2nd pressure hPa : 520

Rack travel in m: 13.30...13.40

3rd pressure hPa : 200

Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 225 (245)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1000

Del.quantity cm3/ : 263.5...266.5
1000 s: (260.5...269.5)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 167.0...169.0

1000 s: (164.0...172.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 156.0...186.0

1000 s: (152.0...190.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.50...4.90

Del.quantity cm3/ : 20.0...26.0

1000 s: (17.0...29.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

:

Note remarks

Testing:

1st rack travel in: 12.40
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.80...9.00

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 8.90...9.10
2nd pressure hPa : 500
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 600
Del.quantity cm3/ : 192.0...195.0
1000 s: (188.0...198.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)

H19

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 t
Edition : 20.12.91
Replaces : 29.11.91
Test oil : ISO-4113

Combination no. : 0 402 746 914

Injection pump
Pump designation : PES6P120A720LS7238
EP type number : 0 412 726 852
Governor
Governor design. : RQ300/1100PA1008
Governor no. : 0 421 801 591

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hLA

1st version kW : 220.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.60
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.40
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 600
Rack travel mm : 14.00...14.20

Measurement
Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 13.10...13.30
2nd pressure hPa : 400
Rack travel in m: 14.50...14.70
3rd pressure hPa : 800
Rack travel in m: 15.10...15.30
4th pressure hPa : 890
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 11.50...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm³/ : 229.0...232.0
1000 s: (226.0...235.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 238.0...242.0
1000 s: (235.0...245.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 147.0...149.0
1000 s: (144.0...152.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 11.50...11.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 u 1
Edition : 20.12.91
Replaces : 26.7.91
Test oil : ISO-4113

Combination no. : 0 402 746 916

Injection pump
Pump designation : PES6P120A72CLS7237
EP type number : 0 412 726 851
Governor
Governor design. : RQ300/1100PA1010
Governor no. : 0 421 801 596

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.20...12.40

Del. quantity cm³/ : 16.0...16.2
100 s: (15.7...16.5)

Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.8...6.4
Del. quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 550
Del. quantity : 160.0...162.0
1000 : (157.0...165.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.1

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.80...6.40
Rack travel in mm : 2.00
Speed rpm : 390...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 550
Rack travel mm : 12.20...12.40

Measurement

Speed 1/min : 600
1st pressure hPa : 220
Rack travel in m: 11.50...11.70
2nd pressure hPa : 300
Rack travel in m: 11.80...12.00
3rd pressure hPa : 800
Rack travel in m: 12.40...12.60
4th pressure hPa : 1100
Rack travel in m: 12.80...13.00
5th pressure hPa : -
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1900
Speed rpm : 1100
Del.quantity cm3/ : 210.0...213.0
1000 s: (207.0...216.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1900
Speed rpm : 800
Del.quantity cm3/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 128.0...130.0
1000 s: (125.0...133.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 t 1
Edition : 23.10.91
Replaces : 26.7.91
Test oil : ISO-4113

Combination no. : 0 402 746 917

Injection pump
Pump designation : PES6P120A720LS7238
EP type number : 0 412 726 852
Governor
Governor design. : RQ300/1100PA1010-1
Governor no. : 0 421 801 597

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hLA

1st version kW : 220.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm3/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.60
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.00...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 600
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.60...13.80
3rd pressure hPa : 800
Rack travel in m: 15.10...15.30
4th pressure hPa : -
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm³/ : 229.0...232.0
1000 s: (226.0...235.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

H25

Del.quantity cm³/ : 154.0...156.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 t 2
Edition : 31.01.92
Replaces : 26.7.91
Test oil : ISO-4113

Combination no. : 0 402 746 918

Injection pump
Pump designation : PES6P120A720LS7238
EP type number : 0 412 726 852
Governor
Governor design. : RQ300/1100PA1013
Governor no. : 0 421 801 599

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hLA

1st version kW : 220.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del. quantity cm³/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del. quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 94...102

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.60
Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever

position degrees: 69...77

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.3

Testing:

Speed rpm : 200

Minimum rack travel: 8.2J

Speed rpm : 300

Rack travel in mm : 6.00...6.60

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 600

Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 250

Rack travel in m: 12.20...12.40

2nd pressure hPa : 400

Rack travel in m: 13.60...13.80

3rd pressure hPa : 800

Rack travel in m: 14.20...14.40

4th pressure hPa : -

Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Speed rpm : 1100

Del.quantity cm3/ : 229.0...232.0

1000 s: (226.0...235.0)

H27

Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1400

Speed rpm : 700

Del.quantity cm3/ : 233.0...237.0

1000 s: (230.0...240.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 148.0...150.0

1000 s: (145.0...153.0)

Spread cm3 : -

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...240.0

1000 s: (216.0...244.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 u 2
Edition : 18.12.91
Replaces : 26.7.91
Test oil : ISO-4113

Combination no. : 0 402 746 919

Injection pump
Pump designation : PES6P120A720LS7237
EP type number : 0 412 726 851
Governor
Governor design. : RQZ 1/1100PA1013-1
Governor no. : 0 421 801 603

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 12.00...12.20
Del.quantity cm3/ : 16.3...16.5
100 s: (16.0...16.8)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.6...6.2
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 550
Del.quantity : 163.0...165.0
1000 : (160.0...168.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 550
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.60...11.80
2nd pressure hPa : 800
Rack travel in m: 12.20...12.40
3rd pressure hPa : 1100
Rack travel in m: 12.60...12.80
4th pressure hPa : -
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1700
Speed rpm : 1100
Del.quantity cm3/ : 199.0...202.0
1000 s: (196.0...205.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1700
Speed rpm : 800

Del.quantity cm3/ : 203.0...207.0
1000 s: (200.0...210.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 139.0...141.0
1000 s: (136.0...144.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 L
Edition : 20.12.91
Replaces : 27.11.91
Test oil : ISO-4113

Combination no. : 0 402 746 924

Injection pump
Pump designation : PES6P110A320RS7243
EP type number : 0 412 716 806
Governor
Governor design. : RQV275...1250PA942-2
K
Governor no. : 0 421 815 288

Customer spec. information
Customer : RVI

Engine : MIDRO-06-26 L/2

1st version kW : 132.5
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

J02

Prestroke mm : 4.85...4.95
: (4.80...5.00)
Rack travel in mm : 13.00...14.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.60...5.80
& maximum rack tra: 20.0...21.0
Difference ° CS : 1.00...2.50

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.70...13.80

Del. quantity cm3/ : 14.0...14.2

100 s: (13.7...14.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 5.9...6.3

Del. quantity cm3/ : 2.3...2.8

100 s: (2.0...3.0)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320
travel mm : 9.70...9.90

2nd speed rpm : 275
travel mm : 0.90...1.10

3rd speed rpm : 600
travel mm : 4.20...4.60

4th speed rpm : 1000
travel mm : 7.00...7.40

5th speed rpm : 1600
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1470

Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250
Aneroid pressure h : 1000
Del.quantity : 140.0...142.0
1000 : (137.5...144.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 276...284

Testing:

1st rack travel in: 12.70
Speed rpm : 1320...1330
2nd rack travel in: 4.00
Speed rpm : 1465...1495
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 219...227

Testing:

Speed rpm : 200
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 350...480

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 13.70...13.80
2nd speed rpm : 650
Rack travel in m: 12.70...12.90
3rd speed rpm : 300
Rack travel in m: 12.00...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1250
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement

J03

Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 10.80...11.00
2nd pressure hPa : 300
Rack travel in m: 12.00...12.10
3rd pressure hPa : 180
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm³/ : 126.0...130.0
1000 s: (123.0...133.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 79.0...81.0
1000 s: (76.5...83.5)
Spread cm³ : 10.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.90...6.30
Del.quantity cm³/ : 23.0...28.0
1000 s: (20.5...30.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 k
Edition : 18.12.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 926
Injection pump
Pump designation : PES6P120A72CRS7224
EP type number : 0 412 726 840
Governor
Governor design. : RQ275/1050PA1021
Governor no. : 0 421 801 623

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.41.721

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
: (5.05...5.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.80

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 275
Rack travel in mm : 4.70...4.90

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.80...10.90
2nd speed rpm : 550
Rack travel in m: 10.80...11.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 850
Pressure hPa : 900
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 850

1st pressure hPa : -
Rack travel in m: 7.30...7.50
2nd pressure hPa : 430
Rack travel in m: 9.90...10.00
3rd pressure hPa : 250
Rack travel in m: 8.20...8.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm3/ : 220.0...226.0
1000 s: (217.0...229.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...5.00
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 k 1
Edition : 18.12.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 927
Injection pump
Pump designation : PES6P120A720RS7224
EP type number : 0 412 726 840
Governor
Governor design. : RQ275/1050PA1021-1
Governor no. : 0 421 801 624

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.41.731

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 105
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
: (5.05...5.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 12.70...12.80
Del.quantity cm3/ : 22.2...22.4
100 s: (21.9...22.7)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 4.6...5.0
Del.quantity cm3/ : 2.0...2.6
100 s: (1.7...2.9)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 900
Del.quantity : 222.0...224.0
1000 : (219.0...227.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1190...1220

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 275
Rack travel in mm : 4.70...4.90

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.80
2nd speed rpm : 550
Rack travel in m: 12.70...12.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 850
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 850

1st pressure hPa : -
Rack travel in m: 7.30...7.50
2nd pressure hPa : 580
Rack travel in m: 11.30...11.40
3rd pressure hPa : 290
Rack travel in m: 8.60...9.00

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm³/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 126.0...128.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...5.00
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

EDSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 L 1
Edition : 24.01.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 928

Injection pump
Pump designation : PES6F110A32ORS7243
EP type number : 0 412 716 806
Governor
Governor design. : RQV275...1175PA942-3
K
Governor no. : 0 421 815 294

Customer-spec. information
Customer : RVI

Engine : MIDRO6-06-26 M/2

1st version kW : 132.5
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

J08

Prestroke mm : 4.85...4.95
: (4.80...5.00)
Rack travel in mm : 13.00...14.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.40...5.60
& maximum rack tra: 20.0...21.0
Difference ° CS : 1.00...2.50

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 15.2...15.4

100 s: (14.9...15.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 5.4...5.8

Del.quantity cm3/ : 2.2...2.7
100 s: (1.9...2.9)

Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250
travel mm : 9.10...9.30

2nd speed rpm : 275
travel mm : 0.90...1.10

3rd speed rpm : 600
travel mm : 4.20...4.60

4th speed rpm : 1000
travel mm : 7.00...7.40

5th speed rpm : 1600
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1470

Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175
Aneroid pressure h : 1000
Del.quantity : 152.0...154.0
1000 : (149.5...156.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 269...277

Testing:

1st rack travel in: 13.00
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 219...227

Testing:

Speed rpm : 200
Minimum rack travel: 6.20
Speed rpm : 275
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00

CONSTANT REGULATION

Speed rpm : 350...480

TORQUE CONTROL

Dimension a mm : 1.70
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 14.00...14.10
2nd speed rpm : 700
Rack travel in m: 13.10...13.30
3rd speed rpm : 300
Rack travel in m: 12.30...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 420
Rack travel in m: 12.25...12.35
3rd pressure hPa : 240
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 149.0...153.0
1000 s: (146.0...156.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 79.0...81.0
1000 s: (76.5...85.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.40...5.80
Del.quantity cm³/ : 22.0...27.0
1000 s: (19.5...29.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 16,0 c
Edition : 20.12.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 748 804

Injection pump
Pump designation : PES8P120A920/4LS7217
EP type number : 0 412 728 803
Governor
Governor design. : RQV325..1050PA848-30
K
Governor no. : 0 421 315 289

Customer-spec. information
Customer : MACK

Engine : ES9 502

1st version kW : 368.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 103

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 2- 7- 8- 4- 5-
6- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50
& maximum rack tra: 10.00
Difference ° CS : 1.70...2.00

BASIC SETTING

1st speed rpm : 630

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 26.6...26.8

100 s: (26.3...27.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 6.1...6.3

Del.quantity cm³/ : 4.7...5.3

100 s: (4.5...5.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.40...1.60

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 950

travel mm : 7.90...8.30

4th speed rpm : 1100

travel mm : 9.40...9.60

5th speed rpm : 1300

travel mm : 11.50...11.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 1270
Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 630
Aneroid pressure h: 1200
Del. quantity : 266.0...268.0
1000 : (263.0...271.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 62...70

Testing:

1st rack travel in: 13.50
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:

Speed rpm : 275
Minimum rack travel: 1.00
Speed rpm : 325
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 325...580

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 630
Rack travel in m: 13.30...13.40
2nd speed rpm : 1050
Rack travel in m: 14.50...14.70
3rd speed rpm : 800
Rack travel in m: 13.90...14.30
4th speed rpm : 500
Rack travel in m: 0.00...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1050

Pressure hPa : 1200
Rack travel mm : 14.50...14.70

Measurement

Speed 1/min : 1050

1st pressure hPa : -

Rack travel in m: 10.60...11.00
2nd pressure hPa : 175
Rack travel in m: 11.40...11.50
3rd pressure hPa : 315
Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del. quantity cm³/ : 264.0...270.0
1000 s: (261.0...273.0)
Spread cm³ : 10.00
1000 s: (14.0)
Speed rpm : 950
Del. quantity cm³/ : 199.0...201.0 *
1000 s: (186.0...213.5)
Aneroid pressure h: -
Speed rpm : 400
Del. quantity cm³/ : 208.5...212.5
1000 s: (206.5...214.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 180.0...220.0
1000 s: (176.0...224.0)
Rack travel in mm : 11.50...12.10

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.10...6.30
Del. quantity cm³/ : 47.0...53.0
1000 s: (45.0...55.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5195-P2

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test
bench: setting for test equipment,
check value for engine equipment.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 h
Edition : 18.12.91
Replaces : 29.11.91
Test oil : ISO-4113

Combination no. : 0 402 846 052

Injection pump
Pump designation : FE6P110A320RS8009-1
EP type number : 0 412 816 011
Governor
Governor design. : RQV300...1100PA1017
Governor no. : 0 421 813 965

Customer-spec. information
Customer : VME

Engine : TD73KBE

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 2 417 413 078

Inlet press., bar : 2.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.00...10.10

Del.quantity cm³/ : 16.4...16.6

100 s: (16.2...16.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm³/ : 2.1...2.5

100 s: (1.8...2.8)

Spread cm³ : 0.7

100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.30

2nd speed rpm : 500

travel mm : 2.60...3.20

3rd speed rpm : 800

travel mm : 4.90...5.50

4th speed rpm : 1150

travel mm : 8.20...8.40

5th speed rpm : 1300

travel mm : 10.10...10.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 164.0...166.0

1000 : (162.0...168.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 9.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 300
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 300...370

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1000
Pressure hPa : 1200
Rack travel mm : 10.00...10.10

Measurement
Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 7.70...7.90
2nd pressure hPa : 90
Rack travel in m: 7.90...8.00
3rd pressure hPa : ?
Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 116.0...118.0
1000 s: (113.0...121.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.00
Speed rpm : 1140...1150

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90

Remarks:

APPLICATION

Wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 G
Edition : 24.01.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 403 244 030

Injection pump
Pump designation : PES4MW100/720RS1513
EP type number : 0 413 204 011
Governor
Governor design. : RQV300...1300MW119
Governor no. : 0 420 083 251

Customer-spec. information
Customer : MB-NFZ

Engine : OM364LA

1st version kW : 102.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 21.00...0.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.80

2nd speed rpm : 880

travel mm : 4.90...5.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 11.80
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:
Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.90...8.00

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 8.70...8.90
2nd pressure hPa : 500
Rack travel in m: 10.90...11.00
3rd pressure hPa : 1000
Rack travel in m: 12.80...12.90

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600
Del. quantity cm³/ : 115.0...118.0
1000 s: (112.5...120.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del. quantity cm³/ : 47.5...49.5
1000 s: (45.5...51.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 105.0...115.0
1000 s: (102.0...118.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del. quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 F
Edition : 22.01.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 403 246 030

Injection pump
Pump designation : PES6MW100/720RS1511
EP type number : 0 413 206 011
Governor
Governor design. : RQ300/1300MW105-9
Governor no. : 0 420 082 061

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 13.0...13.2

100 s: (12.8...13.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 8.10...8.50

2nd speed rpm : 1300

travel mm : 6.90...7.10

3rd speed rpm : 600

travel mm : 4.80...5.40

4th speed rpm : 300

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 1000

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1200

Del.quantity : 130.0...132.0

1000 : (128.0...136.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 101...109

Setting point:

Speed rpm : 1000
Rack travel in mm : 15.5

Testing:

1st rack travel in: 12.40
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:

Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.80...7.90

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 8.50...8.70
2nd pressure hPa : 600
Rack travel in m: 10.60...10.80
3rd pressure hPa : 1200
Rack travel in m: 13.40...13.50

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750

Del.quantity cm3/ : 122.5...125.5
1000 s: (120.0...128.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 4,5 0
Edition : 24.01.92
Replaces : 07.91
Test oil : ISO-4113

Combination no. : 0 403 444 132

Injection pump
Pump designation : PES4MW100/320RS1222
EP type number : 0 413 404 117
Governor
Governor design. : RQV300...1100MW39-5
Governor no. : 0 420 083 068

Customer-spec. information
Customer : VME

Engine : TD45B

1st version kW : 88.5
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 173...176

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1225

travel mm : 9.40...9.80

2nd speed rpm : 1150

travel mm : 8.30...8.50

3rd speed rpm : 600

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 117.0...119.0

1000 : (115.0...121.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 100...108

Testing:
1st rack travel in: 12.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1000
Del.quantity cm³/ : 117.0...120.0
1000 s: (114.5...122.5)
Spread cm³ : 5.50
1000 s: (7.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...150.0
1000 s: (137.0...153.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

J20

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 B 1
 Edition : 22.01.92
 Replaces : 01.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 272
 Injection pump
 Pump designation : PES6MW100/72ORS1131-1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RG300/1300MW105-1
 Governor no. : 0 420 082 048

Customer spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 155.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1360

travel mm : 7.30...7.50

3rd speed rpm : 550

travel mm : 4.20...4.80

4th speed rpm : 300

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 900

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 99...107

Setting point:

Speed rpm : 900
Rack travel in mm : 15.5

Testing:

1st rack travel in: 12.10
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.20...11.30
2nd pressure hPa : 350
Rack travel in m: 12.40...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm3/ : 87.0...91.0
1000 s: (85.0...93.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 36.0...73.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 D 3
 Edition : 22.01.92
 Replaces : 06.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 279
 Injection pump
 Pump designation : PES6MM100/72ORS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RQ300/1200MW105-6
 Governor no. : 0 420 082 054

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 115.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm³/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300
 travel mm : 8.80...9.20

2nd speed rpm : 1200
 travel mm : 7.40...7.60

3rd speed rpm : 700
 travel mm : 6.70...7.30

4th speed rpm : 450
 travel mm : 5.10...5.70

5th speed rpm : 300
 travel mm : 2.60...3.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 108

Speed rpm : 800

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 94...102

Setting point:

Speed rpm : 800

Rack travel in mm : 15.5

Testing:

1st rack travel in: 9.20

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1305...1335

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.4

Testing:

Speed rpm : 200

Minimum rack travel: 7.50

Speed rpm : 300

Rack travel in mm : 5.30...5.50

Rack travel in mm : 2.00

Speed rpm : 410...470

TORQUE CONTROL

Dimension a mm : 0.80

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 10.20...10.30

2nd speed rpm : 600

Rack travel in m: 10.90...11.10

3rd speed rpm : 1100

Rack travel in m: 10.30...10.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 200

Rack travel mm : 8.90...9.00

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.60...8.70

2nd pressure hPa : 350

Rack travel in m: 10.20...10.50

3rd pressure hPa : 700

Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 600

Del.quantity cm3/ : 78.0...81.0

1000 s: (75.5...83.5)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 44.0...46.0

1000 s: (42.0...48.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 5.30...5.50

Del.quantity cm3/ : 10.0...14.0

1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA8,1D1
Edition : 31.01.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 403 446 284

Injection pump
Pump designation : PES6MW100/720RS1197
EP type number : 0 413 406 185
Governor
Governor design. : RQV325...1250MW109-1
K
Governor no. : 0 420 083 995

Customer spec. information
Customer : IVECO-FIAT

Engine : 8060.45.6090

1st version kW : 167.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.50...14.60

Del.quantity cm³/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 10.00...10.40

2nd speed rpm : 825

travel mm : 4.90...5.10

3rd speed rpm : 400

travel mm : 2.90...3.50

4th speed rpm : 325

travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.50
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.5

Testing:

Speed rpm : 200
Minimum rack travel: 9.50
Speed rpm : 325
Rack travel in mm : 7.40...7.60

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.50...14.60
2nd speed rpm : 1100
Rack travel in m: 14.20...14.40
3rd speed rpm : 900
Rack travel in m: 13.70...13.90
4th speed rpm : 700
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 11.70...11.80
2nd pressure hPa : 700
Rack travel in m: 12.80...13.10
3rd pressure hPa : 1000
Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1100
Del.quantity cm3/ : 108.0...111.0
1000 s: (105.5...113.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 67.0...69.0
1000 s: (65.0...71.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...60.0
1000 s: (37.0...63.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.40...7.60
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 B 8
Edition : 22.01.92
Replaces : 11.91
Test oil : ISO-4113
Combination no. : 0 403 446 294
Injection pump
Pump designation : PES6MW100/720RS1131-
1
EP type number : 0 413 406 165
Governor
Governor design. : RQV300...1100MW67-4
Governor no. : 0 420 083 261

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 162.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 11.2...11.4
100 s: (11.0...11.6)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 0.9...1.3
100 s: (0.6...1.5)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150
travel mm : 7.80...8.30
2nd speed rpm : 880
travel mm : 5.90...6.10
3rd speed rpm : 500
travel mm : 2.70...3.30
4th speed rpm : 300
travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1000
Del.quantity : 112.0...114.0
1000 : (110.0...116.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Setting point:
Speed rpm : 1150
Rack travel in mm : 16.5

Testing:
1st rack travel in: 12.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.4

Testing:
Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.30...5.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.40...9.50

Measurement
Speed 1/min : 500

1st pressure hPa : 400
Rack travel in m: 10.60...10.80
2nd pressure hPa : 600
Rack travel in m: 12.60...12.80
3rd pressure hPa : 1000
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600

Del.quantity cm3/ : 104.5...107.5
1000 s: (102.0...110.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 A 1
Edition : 24.01.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 299
Injection pump
Pump designation : PES6MM100/720RS1144
EP type number : 0 413 406 138
Governor
Governor design. : RQV300...1200MW69-5
Governor no. : 0 420 083 266

Customer-spec. information
Customer : MB-NFZ

Engine : OM366A

1st version kW : 116.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

K01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 7.7...7.9
100 s: (7.5...8.1)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 7.7...7.9
Del.quantity cm3/ : 0.9...1.3
100 s: (0.6...1.5)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1250
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Del.quantity : 77.0...79.0
1000 : (75.0...81.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 10.00
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever

position degrees: 84...92
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:

Speed rpm : 200
Minimum rack trave: 9.30
Speed rpm : 300
Rack travel in mm : 7.70...7.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.00...11.10
2nd speed rpm : 750
Rack travel in m: 11.70...11.90
3rd speed rpm : 600
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 70.5...73.5
1000 s: (68.0...76.0)
Spread cm² : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.70...7.90
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S 5
Edition : 31.01.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 446 300

Injection pump
Pump designation : PES6MW100/32ORS1171
EP type number : 0 413 406 156
Governor
Governor design. : RGV300...1300MW80-7
Governor no. : 0 420 083 267

Customer-spec. information
Customer : RVI

Engine : MIDS 06C212B

1st version kW : 117.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.40...5.80

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.70...9.10

2nd speed rpm : 1350

travel mm : 7.60...7.80

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 9.80
Speed rpm : 1390...1400
2nd rack travel in: 4.00
Speed rpm : 1505...1535
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.0
Speed rpm : 300
Rack travel in mm : 5.40...5.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 120
Rack travel in m: 10.40...10.50
3rd pressure hPa : 180
Rack travel in m: 9.60...9.90

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (87.0...113.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.40...5.80
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark made with
prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 B 12
 Edition : 31.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 301
 Injection pump
 Pump designation : PES6MM100/720RS1131-
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RGV300...1300MW50-22
 Governor no. : 0 420 083 268

Customer spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.60...3.20

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Setting point:
Speed rpm : 1340
Rack travel in mm : 16.5

Testing:
1st rack travel in: 13.40
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86
Setting point w/cut bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.30...6.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.60...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.90...11.10
2nd pressure hPa : 500
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750

K06

Del.quantity cm3/ : 106.5...109.5
1000 s: (104.0...112.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 V 1
Edition : 21.08.91
Replaces : 06.91
Test oil : ISO-4113

Combination no. : 0 403 456 114

Injection pump
Pump designation : PES6MW100/321RS1201
EP type number : 0 413 406 190
Governor
Governor design. : RGV250...1200MW83-2
Governor no. : 0 420 083 216

Customer-spec. information
Customer : MAN

Engine : D 0826 LFO2

1st version kW : 169.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

K07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 10.50...10.60

2nd speed rpm : 810

travel mm : 5.90...6.10

3rd speed rpm : 500

travel mm : 3.70...4.30

4th speed rpm : 250

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 120...128

Testing:

1st rack travel in: 11.30
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1320...1350
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 330...420

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 12.50...12.60
2nd speed rpm : 600
Rack travel in m: 12.70...12.90
3rd speed rpm : 800
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.20...12.40

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 155
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 550
Rack travel in m: 11.90...12.20
3rd pressure hPa : 1000
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

K08

Speed rpm : 600
Del.quantity cm3/ : 137.0...140.0
1000 s: (134.5...142.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...80.0
1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7135

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 D
Edition : 24.01.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 403 456 115

Injection pump
Pump designation : PES6MM100/321RS1215
EP type number : 0 413 406 205
Governor
Governor design. : RQ250/1200MM84-7
Governor no. : 0 420 082 055

Customer spec. information
Customer : MAN

Engine : D 0826 LUH 01

1st version kW : 199.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 17.5...17.7

100 s: (17.3...17.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 2.8...3.2

100 s: (2.5...3.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

travel mm : 9.30...9.70

2nd speed rpm : 1255

travel mm : 6.50...6.70

3rd speed rpm : 360

travel mm : 3.90...4.50

4th speed rpm : 250

travel mm : 1.60...2.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 175.0...177.0

1000 : (173.0...179.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 91...99

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.20
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1340...1370
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.4

Testing:

Speed rpm : 150
Minimum rack travel: 8.00
Speed rpm : 250
Rack travel in mm : 6.30...6.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 350
Rack travel mm : 9.70...9.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.10
2nd pressure hPa : 850
Rack travel in m: 12.30...12.60
3rd pressure hPa : 1200
Rack travel in m: 14.20...14.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 180.0...183.0
1000 s: (177.5...185.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 60.0...62.0
1000 s: (58.0...64.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...80.0
1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 28.0...32.0
1000 s: (25.5...34.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7126
Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 4,5 P
 Edition : 24.01.92
 Replaces : 07.91
 Test oil : ISO-4113
 Combination no. : C 403 474 015
 Injection pump
 Pump designation : PES4MW100/320RS1221
 EP type number : 0 413 404 115
 Governor
 Governor design. : RSV300...1000MW1A315
 -1
 Governor no. : 0 420 085 099

Customer-spec. information
 Customer : VME

Engine : TD45B

1st version kW : 84.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.40...12.50
 Del.quantity cm³/ : 10.5...10.7
 100 s: (10.3...10.9)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 8.4...8.6
 Del.quantity cm³/ : 1.3...1.7
 100 s: (1.0...1.9)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 105.0...107.0
 1000 : (103.0...109.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 100...108

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 11.40

Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1070...1100
3rd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 300
Rack travel in mm : 7.90...8.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del.quantity cm3/ : 108.0...111.0
1000 s: (105.5...113.5)
Spread cm3 : 5.50
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...135.0
1000 s: (122.0...138.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.40...8.60
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet :
Edition : 10.02.1991
Replaces :
Test oil : ISO-4113
Combination no. : 0 403 476 039
Injection pump
Pump designation : PES6MM100/320RS1132
EP type number : 0 413 406 124
Governor
Governor design. : RSV325...1250M/2A314
-2
Governor no. : 0 420 085 054

Customer-spec. information
Customer : VOLVO-PENTA

Engine : TD 61 AW

1st version kW : 132.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 457 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 2.00x6.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00
: (2.85...3.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 9.5...9.7

100 s: (9.3...9.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 5.6...5.7

Del.quantity cm³/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 95.0...97.0

1000 : (93.0...99.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 46...54

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.30

Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1360...1390
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 5.10...5.20

SET IDLE AUXILIARY SPRING

Speed rpm : 325
Rack travel in mm : 5.60...5.70

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 700
Pressure hPa : 300
Rack travel mm : 10.20...10.30

Measurement

Speed 1/min : 700

1st pressure hPa : 425
Rack travel in m: 11.10...11.20
2nd pressure hPa : -
Rack travel in m: 9.80...9.90
3rd pressure hPa : 700
Rack travel in m: 11.30...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700
Del.quantity cm³/ : 68.5...70.5
1000 s: (66.5...72.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1290...1300

K14

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (137.0...163.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.60...5.70
Del.quantity cm³/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 P 6
 Edition : 31.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 042
 Injection pump
 Pump designation : PES6MW100/320RS1132
 EP type number : 0 413 406 124
 Governor
 Governor design. : RSV325...1250MW2A308
 Governor no. : 0 420 085 186

Customer-spec. information
 Customer : VOLVO-PENTA

Engine : TD 61 APP

1st version kW : 147.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 2.00X6.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00
 : (2.85...3.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.1...6.2

Del.quantity cm³/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.80

Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1340...1370
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 6.10...6.20

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (137.0...163.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.10...6.20
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 5,6 G
Edition : 22.01.92
Replaces : 03.91
Test oil : ISO-4113

Combination no. : 0 403 476 099

Injection pump
Pump designation : PES6MW100/320RS1209
EP type number : 0 413 406 200
Governor
Governor design. : RSV300...750MW1A802
Governor no. : 0 420 085 113

Customer-spec. information
Customer : MAN

Engine : D0826LE20

1st version kW : 116.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 681 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30
: (3.15...3.35)
Rack travel in mm : 14.00...16.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 14.3...14.5

100 s: (14.1...14.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 6.6...7.4
Del.quantity cm3/ : 3.4...3.8
100 s: (3.1...4.0)

Spread cm3 : 0.6
100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 143.0...145.0
1000 : (141.0...147.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 84...92

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:
1st rack travel in: 13.5
Speed rpm : 750...755 *

2nd rack travel in: 4.00
Speed rpm : 797...810
4th rack travel in: 950
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.0

Testing:
Speed rpm : 100
Speed rpm : 300
Rack travel in mm : 6.60...7.40
Rack travel in mm : 2.00
Speed rpm : 310...370

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (127.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.60...7.40
Del.quantity cm³/ : 34.0...38.0
1000 s: (31.5...40.5)
Spread cm³ : 6.00
1000 s: (9.00)

Remarks:
: MAN #3-7111

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

* Read off speed set under 1.
Add 47...55 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 6,5 L 4
 Edition : 22.01.92
 Replaces : 03.88
 Test oil : ISO-4113
 Combination no. : 0 403 546 010
 Injection pump
 Pump designation : PE6MW100/720RS1157
 EP type number : 0 413 506 103
 Governor
 Governor design. : RGV250...1200MW93
 Governor no. : 0 420 083 136

Customer-spec. information
 Customer : STEYR

Engine : WD 612.63

1st version kW : 130.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.0

Del.quantity cm³/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 10.00...10.40

2nd speed rpm : 1230

travel mm : 8.30...8.50

3rd speed rpm : 700

travel mm : 4.00...4.60

4th speed rpm : 250

travel mm : 0.80...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 102...110

Testing:
1st rack travel in: 10.90
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1295...1325
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.1

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 6.00...6.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.20...11.30

Measurement
Speed 1/min : 500
2nd pressure hPa : 450
Rack travel in m: 11.50...11.60
3rd pressure hPa : 700
Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm3/ : 103.0...106.0
1000 s: (100.5...108.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 78.0...80.0
1000 s: (76.0...82.0)

K20

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.00
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 6,5 L. 2
Edition : 22.01.92
Replaces : 03.88
Test oil : ISO-4113

Combination no. : 0 403 546 013

Injection pump
Pump designation : PE6MW100/72ORS1157
EP type number : 0 413 506 103
Governor
Governor design. : RQ250/1200MW94
Governor no. : 0 420 082 027

Customer-spec. information
Customer : STEYR

Engine : WD 612.63

1st version kW : 130.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-30-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

travel mm : 8.90...9.30

2nd speed rpm : 1250

travel mm : 6.20...6.40

3rd speed rpm : 375

travel mm : 4.00...4.60

4th speed rpm : 250

travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 96...104

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.90
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1295...1325
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.1

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 6.00...6.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.20...11.30

Measurement
Speed 1/min : 500
2nd pressure hPa : 450
Rack travel in m: 11.50...11.60
3rd pressure hPa : 700
Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm3/ : 103.0...106.0
1000 s: (100.5...108.5)
Spread cm3 : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 78.0...80.0
1000 s: (76.0...82.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 3,3 a
Edition : 18.12.91
Replaces : 24.10.90
Test oil : ISO-4113

Combination no. : 9 400 083 449

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...110DA2C2209
R
Governor no. : 9 420 083 201

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.30...10.40

Del.quantity cm³/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 1.6...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 85...93

Testing:

1st rack travel in: 9.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 10.30...10.50
5th speed rpm : 400
Rack travel in m: 10.70...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 74.0...77.0
1000 s: (71.5...79.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80

K24

Del.quantity cm³/ : 16.5...20.5
1000 s: (14.0...23.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ 6,1 e
Edition : 18.12.91
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 085 259

Injection pump
Pump designation : PES6A80D410RS2755
EP type number : 9 400 093 005
Governor
Governor design. : RS325/14COADE2212L
Governor no. : 9 420 083 205

Customer-spec. information
Customer : DEUTZ ARGENTINA

Engine : F6L913

1st version kW : 104.5
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)
Rack travel in mm : 9.00...12.00

K25

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 6.9...7.0

100 s: (6.7...7.1)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 8.4...8.6

Del.quantity cm³/ : 0.9...1.2

100 s: (0.8...1.4)

Spread cm³ : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 69.0...70.0

1000 : (67.5...71.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 11.00

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1500...1530

4th rack travel in: 1600
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 8.5

Testing:

Speed rpm : 280
Minimum rack trave: 8.80
Speed rpm : 325
Rack travel in mm : 8.40...8.60
Rack travel in mm : 6.00
Speed rpm : 390...450
Speed rpm : 550
Maximum rack trave: 4.40

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 12.00...12.10
2nd speed rpm : 500
Rack travel in m: 12.80...12.90
4th speed rpm : 1100
Rack travel in m: 12.30...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 63.0...65.0
1000 s: (60.5...67.5)
Speed rpm : 1100
Del.quantity cm3/ : 66.0...68.0
1000 s: (64.0...70.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ 6,1 f
Edition : 18.12.91
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 085 293

Injection pump
Pump designation : PES6A80D410RS2755
EP type number : 9 400 093 005
Governor
Governor design. : RQV300...1400AB1234L
Governor no. : 9 420 080 241

Customer spec. information
Customer : DEUTZ ARGENTINA

Engine : F 6 L 913

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 6.9...7.0

100 s: (6.7...7.1)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 0.8...1.1

100 s: (0.7...1.3)

Spread cm3 : 0.2

100 s: (0.3)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 300

travel mm : 0.70...1.20

3rd speed rpm : 550

travel mm : 2.70...3.00

4th speed rpm : 775

travel mm : 4.10...4.60

5th speed rpm : 950

travel mm : 5.20...5.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 69.0...70.0

1000 : (67.5...71.5)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:

1st rack travel in: 11.00
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1570...1600
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 400...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1400
Rack travel in m: 12.00...12.10
2nd speed rpm : 500
Rack travel in m: 12.90...13.00
3rd speed rpm : 1000
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.20...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 63.0...65.0
1000 s: (61.0...67.0)
Speed rpm : 1000
Del.quantity cm³/ : 67.0...69.0
1000 s: (65.0...71.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 h
Edition : 18.12.91
Replaces : 18.9.91
Test oil : ISO-4113

Combination no. : 9 400 085 307

Injection pump
Pump designation : PES4A95D410RS2774
EP type number : 9 400 084 019
Governor
Governor design. : RQV300...1300AB1228-1L
Governor no. : 9 420 080 268

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 364 A

1st version kW : 85.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.45)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.60...10.70

Del.quantity cm³/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm³/ : 0.6...1.2

100 s: (0.4...1.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:
1st rack travel in: 9.60
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1490...1520
4th rack travel in: 1640
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION
Speed rpm : 420...550

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.60...10.70
2nd speed rpm : 800
Rack travel in m: 11.00...11.10
4th speed rpm : 1000
Rack travel in m: 10.80...11.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 410
Rack travel in m: 10.60...10.80
3rd pressure hPa : 280
Rack travel in m: 9.70...9.80

START CUT-OUT

Speed 1/min : 220 (240)

L02

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm3/ : 84.5...87.5
1000 s: (82.0...90.0)
Aneroid pressure h: 700
Speed rpm : 1000
Del.quantity cm3/ : 87.5...90.5
1000 s: (85.0...93.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 52.0...54.0
1000 s: (50.0...56.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...90.0
1000 s: (-)
Rack travel in mm : 12.90...13.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 k
 Edition : 18.12.91
 Replaces : 9.4.91
 Test oil : ISO-4113
 Combination no. : 9 400 085 316
 Injection pump
 Pump designation : PES6A95D410RS2795
 EP type number : 9 400 084 020
 Governor
 Governor design. : RQV300...140QAB1065-18L
 Governor no. : 9 420 080 278

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 100.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del. quantity cm³/ : 6.8...7.0

100 s: (6.6...7.2)

Spread cm³ : 0.3

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del. quantity cm³/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm³ : 0.3

100 s: (0.3)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.50...8.60

2nd speed rpm : 300

travel mm : 0.80...1.30

3rd speed rpm : 500

travel mm : 2.30...2.80

4th speed rpm : 750

travel mm : 4.10...4.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 68.5...70.5

1000 : (66.5...72.5)

Spread cm³ : 3.50

1000 : (3.50)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 8.90
Speed rpm : 1460...1470
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1680
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 7.80...8.00

CONSTANT REGULATION
Speed rpm : 480...630

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 50.0...53.0
1000 s: (47.5...55.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1460...1470

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...90.0
1000 s: (75.0...93.0)
Rack travel in mm : 14.00...14.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 i
 Edition : 18.12.91
 Replaces : 9.4.91
 Test oil : ISO-4113

Combination no. : 9 400 085 333

Injection pump
 Pump designation : PES4A95D410RS2805
 EP type number : 9 400 084 026
 Governor
 Governor design. : RQV300...1400AB1065-
 21L
 Governor no. : 9 420 080 303

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.60...9.70

Del. quantity cm³/ : 7.0...7.2

100 s: (6.8...7.4)

Spread cm³ : 0.3

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...7.6

Del. quantity cm³/ : 0.5...1.1

100 s: (0.3...1.3)

Spread cm³ : 0.3

100 s: (0.3)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.50...8.60

2nd speed rpm : 300

travel mm : 0.80...1.30

3rd speed rpm : 500

travel mm : 2.30...2.80

4th speed rpm : 750

travel mm : 4.10...4.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 70.0...72.0

1000 : (68.0...74.0)

Spread cm³ : 3.50

1000 : (3.50)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 8.60
Speed rpm : 1460...1470
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1680
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 7.40...7.60

CONSTANT REGULATION
Speed rpm : 480...630

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 54.5...57.5
1000 s: (52.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.60
Speed rpm : 1460...1470

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...90.0
1000 s: (75.0...93.0)
Rack travel in mm : 13.80...14.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MM 6,5 a
Edition : 18.12.91
Replaces : 3.6.91
Test oil : ISO-4113

Combination no. : 9 400 085 336

Injection pump
Pump designation : PES6A95D410RS2812
EP type number : 9 400 084 028
Governor
Governor design. : RQV350...1400A91261L
Governor no. : 9 420 080 307

Customer-spec. information
Customer : MM

Engine : D 610 / X-10

1st version kW : 110.7
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm³/ : 7.0...7.2

100 s: (6.8...7.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.7

Del.quantity cm³/ : 0.9...1.3

100 s: (0.8...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.10...7.30

2nd speed rpm : 300

travel mm : 0.80...1.30

3rd speed rpm : 550

travel mm : 2.50...3.00

4th speed rpm : 800

travel mm : 3.70...4.20

5th speed rpm : 1500

travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1490

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1400
Del.quantity : 70.0...72.0
1000 : (68.0...74.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 109...117

Testing:
1st rack travel in: 8.70
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1525...1555
4th rack travel in: 1680
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 64...72

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 350...500

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.70...9.80
2nd speed rpm : 700
Rack travel in m: 10.00...10.10
3rd speed rpm : 1000
Rack travel in m: 10.00...10.10
4th speed rpm : 1300
Rack travel in m: 9.70...9.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm3/ : 61.0...64.0
1000 s: (58.5...66.5)
Speed rpm : 1000
Del.quantity cm3/ : 70.5...73.5
1000 s: (68.0...76.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.70
Del.quantity cm3/ : 9.5...13.5
1000 s: (8.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MMM 6,5 a 1
Edition : 18.12.91
Replaces : 3.6.91
Test oil : ISO-4113

Combination no. : 9 400 085 337

Injection pump
Pump designation : PES6A95D410RS2812
EP type number : 9 400 084 028
Governor
Governor design. : RQV350...1300AB1260L
Governor no. : 9 420 080 306

Customer-spec. information
Customer : MMM

Engine : TD 610 / X-10

1st version kW : 143.9
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 0.8...1.2

100 s: (0.7...1.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.10...7.30

2nd speed rpm : 300

travel mm : 0.80...1.30

3rd speed rpm : 550

travel mm : 2.50...3.00

4th speed rpm : 800

travel mm : 3.70...4.20

5th speed rpm : 1500

travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1490

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300
Aneroid pressure h: 800
Del.quantity : 93.5...95.5
1000 : (91.5...97.5)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 107...115

Testing:

1st rack travel in: 11.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1490...1520
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 350...500

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 12.00...12.10
2nd speed rpm : 800
Rack travel in m: 12.30...12.40
3rd speed rpm : 850
Rack travel in m: 12.30...12.40
4th speed rpm : 1150
Rack travel in m: 12.00...12.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 460

Rack travel in m: 11.70...12.00

3rd pressure hPa : 190

Rack travel in m: 10.70...10.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 800

Del.quantity cm³/ : 94.0...97.0

1000 s: (91.5...99.5)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 58.5...60.5

1000 s: (56.5...62.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.40...5.60

Del.quantity cm³/ : 8.5...12.5

1000 s: (7.0...14.0)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 k 1
 Edition : 18.12.91
 Replaces : 26.6.91
 Test oil : ISO-4113

Combination no. : 9 400 085 343

Injection pump
 Pump designation : PES6A95D410RS2795
 EP type number : 9 400 084 020
 Governor
 Governor design. : RQV300...1400AB1065-18L
 Governor no. : 9 420 080 278

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 100.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm³/ : 6.8...7.0

100 s: (6.6...7.2)

Spread cm³ : 0.3

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del.quantity cm³/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm³ : 0.3

100 s: (0.3)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.50...8.60

2nd speed rpm : 300

travel mm : 0.80...1.30

3rd speed rpm : 500

travel mm : 2.30...2.80

4th speed rpm : 750

travel mm : 4.10...4.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 68.5...70.5

1000 : (66.5...72.5)

Spread cm³ : 3.50

1000 : (3.50)

RATED SPEED

1st version
Control Lever
position degrees: 106...114

Testing:
1st rack travel in: 8.90
Speed rpm : 1460...1470
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1680
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 7.80...8.00

CONSTANT REGULATION
Speed rpm : 480...630

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 50.0...53.0
1000 s: (47.5...55.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1460...1470

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...90.0
1000 s: (75.0...93.0)
Rack travel in mm : 14.00...14.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 j
Edition : 18.12.91
Replaces : 26.3.90
Test oil : ISO-4113

Combination no. : 9 400 087 372

Injection pump
Pump designation : PE8P120A920/4LS7002T
EP type number : 9 400 087 054
Governor
Governor design. : RQV200...1000PA547-2
Governor no. : 9 420 080 238

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DSC 14 07

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 18.7...18.9
100 s: (18.4...19.2)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 225.0
Rack travel in mm : 4.7...4.9
Del.quantity cm3/ : 1.0...1.6
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 8.40...8.60
2nd speed rpm : 225
travel mm : 1.20...1.60
3rd speed rpm : 350
travel mm : 2.40...3.00
4th speed rpm : 650
travel mm : 4.50...5.10
5th speed rpm : 1150
travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1000
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 600
Del.quantity : 187.0...189.0
1000 : (184.0...192.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 12.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 6...14

Testing:
Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 225
Rack travel in mm : 4.40...4.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 13.20...13.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.30...11.40
2nd pressure hPa : 355
Rack travel in m: 12.50...12.60
3rd pressure hPa : 260
Rack travel in m: 11.80...12.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 600
Speed rpm : 1000
Del.quantity cm³/ : 183.0...191.0
1000 s: (181.0...193.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 137.0...141.0
1000 s: (135.0...143.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,0 y4
Edition : 18.12.91
Replaces : 24.10.90
Test oil : ISO-4113

Combination no. : 9 400 087 440

Injection pump
Pump designation : PE6P110A720RS3115-1
EP type number : 0 411 816 764
Governor
Governor design. : RQV250...1100PA468
Governor no. : 0 421 813 225

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DN 11-08

1st version kW : 158.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40
: (3.25...3.45)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm3 : 0.5

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.4...4.8

Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.20...1.60

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed rpm : 650

travel mm : 4.60...5.20

4th speed rpm : 1145

travel mm : 8.60...8.80

5th speed rpm : 1255

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm3 : 5.00

1000 : (7.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 10.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 360...420

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100
Del.quantity cm³/ : 110.5...115.5
1000 s: (108.0...118.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (236.0...294.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60

Remarks:

:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with RO30
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h 5
Edition : 18.12.91
Replaces : 7.86
Test oil : ISO-4113

Combination no. : 9 400 230 035

Injection pump
Pump designation : PES6A100D410RS2676-1
EP type number : 9 410 230 024
Governor
Governor design. : RSV450...1100A2C2204
L
Governor no. : 9 420 234 121

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 119.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

L17

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.4)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 99.5...101.5

1000 : (97.5...103.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 8.80
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1210...1220
3rd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.80...9.90
2nd speed rpm : 500
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 114.0...118.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 17.5...21.5
1000 s: (15.0...24.0)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE19919
Start-of-delivery mark is at 15°
angular displacement of the cam after
start of delivery at cylinder 1 with
control-rod travel 9.00...12.00 mm

Starting/full-load transition speed
from holding magnet = 450 1/min.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b 7
 Edition : 18.12.91
 Replaces : 1.2.90
 Test oil : ISO-4113
 Combination no. : 9 400 230 103
 Injection pump
 Pump designation : PES6A100D410RS2691-2
 EP type number : 9 410 230 028
 Governor
 Governor design. : RQV350...110QAB1227R
 Governor no. : 9 420 231 015

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.8...2.2
 100 s: (1.5...2.4)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100
 travel mm : 7.70...7.70

2nd speed rpm : 1150
 travel mm : 8.00...8.60

3rd speed rpm : 1290
 travel mm : 9.50...10.10

4th speed rpm : 350
 travel mm : 1.20...1.60

5th speed rpm : 600
 travel mm : 3.90...4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 900
 Del.quantity : 125.5...127.5
 1000 : (123.5...129.5)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 11.60
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1260...1290
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17
Speed rpm : 350
Rack travel in mm : 5.40...5.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 405
Rack travel in m: 10.90...11.00
3rd pressure hPa : 535
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 260 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 81.0...85.0
1000 s: (79.0...87.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1145...1155

L20

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 15.30...15.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:
: C.D.C. # 3912645

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at 7° after
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b15
 Edition : 18.12.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 230 107JE
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 -2
 EP type number : 9 410 230 028
 Governor
 Governor design. : RQV350...1200AB1233R
 Governor no. : 9 420 231 018

Cust. part no. : 3917976

Customer-spec. information
 Customer : CDC

Engine : 6 CT 830

1st version kW : 155.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 11.3...11.4

100 s: (11.1...11.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...4.8

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 0.60...1.10

2nd speed rpm : 460
 travel mm : 1.40...1.90

3rd speed rpm : 510
 travel mm : 1.70...2.20

4th speed rpm : 870
 travel mm : 3.40...3.90

5th speed rpm : 1250
 travel mm : 6.50...7.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1490

Rack travel in mm : 8.50...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 1200
Del.quantity : 113.5...114.5
1000 : (111.0...117.0)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 41...49

Testing:
1st rack travel in: 9.80
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 250
Minimum rack travel: 6.00
Speed rpm : 350
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 440...500

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.80...10.90
2nd speed rpm : 500
Rack travel in m: 10.80...11.00

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 10.80...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.50
2nd pressure hPa : 260
Rack travel in m: 9.90...10.00
3rd pressure hPa : 345

Rack travel in m: 10.30...10.70

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 86.0...87.0
1000 s: (83.5...89.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 155.0...165.0
1000 s: (152.0...168.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 n 13
 Edition : 18.12.91
 Replaces : 19.9.86
 Test oil : ISO-4113

Combination no. : 9 407 083 270

Injection pump
 Pump designation : PES6A90D410RS2293
 EP type number : 0 410 896 031
 Governor
 Governor design. : RQV300...1400AB740-1
 L
 Governor no. : 9 420 080 153

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM352-A

1st version kW : 117.8
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 0.8...1.4

100 s: (0.7...1.5)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460
 travel mm : 8.40...8.60

2nd speed rpm : 300
 travel mm : 0.70...1.20

3rd speed rpm : 550
 travel mm : 2.70...3.00

4th speed rpm : 775
 travel mm : 4.10...4.60

5th speed rpm : 950
 travel mm : 5.20...5.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 71.0...72.0

1000 : (69.0...74.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:
1st rack travel in: 10.00
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1555...1585
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.40...7.60

CONSTANT REGULATION
Speed rpm : 320...550

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 52.5...55.5
1000 s: (50.5...57.5)

BREAKAWAY

1st version
1st rack travel less than
full load rack tr: 10.00
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 73.0...83.0
1000 s: (70.0...86.0)
Rack travel in mm : 13.70...14.10

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 2,5 A1
Edition : 03.02.92
replaces : 09.12.91
Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R286-1
Type number : 0 460 414 059
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M711 AT 19.0

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 6.60...7.00
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 7.30...7.90
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 47.30...48.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 750
Del. quantity cm3/
1000S.: 23.30...24.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 6.00...10.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 17.00...23.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...80.00
mind 1000S.: 40.00

KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1750
Charge press hPa: -
Inj.-qty. cm³/
difference 1000S.: 9.00...15.00 *

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1750
Charge press hPa: -
TD-travel
difference mm: 0.50...0.70 *
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 9.30...10.10
mm: (8.80...10.60)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 6.60...7.00
mm: (6.30...7.30)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
Charge press hPa: 1000

TD travel mm: 2.50...3.30
mm: (2.00...3.80)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
8th speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 3.20...5.20
mm: (3.00...5.40)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
9th speed 1/min: 450
Charge press. hPa: 1000
TD travel mm: 3.30...3.50
mm: (2.40...4.40)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.30...7.90
bar: (7.10...8.10)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.50...9.10
bar: (8.30...9.30)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.50...6.10
bar: (5.30...6.30)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Overflow : 75.00...119.540
 quantity cm3/10s: (60.00...134.50)
 2nd speed 1/min: 2100
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.30...180.70
 quantity cm3/10s: (82.30...195.70)
 Delivery-quant. and breakaway char.:

1nd speed 1/min: 750*
 Charge-air pressure-setting
 point hPa: 400
 LDA-stroke mm: 6.3
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 32.50...33.50
 1000S.: (28.00...38.00)
 3rd speed 1/min: 2500
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...6.00
 1000S.: -
 5th speed 1/min: 2400
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 17.00...23.00
 1000S.: (16.00...24.00)
 8th speed 1/min: 2300
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 27.00...35.00
 1000S.: -
 9th speed 1/min: 2100
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 45.50...48.50
 1000S.: (43.80...50.20)
 12th speed 1/min: 1750
 Charge press. hPa: 1000

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 47.30...48.30
 1000S.: (45.80...49.80)
 13th speed 1/min: 750
 Charge press. hPa: 720
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 45.50...49.50
 1000S.: -
 18th speed 1/min: 750
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 23.30...24.30
 1000S.: (21.30...26.30)
 20th speed 1/min: 750
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 45.50...47.50
 1000S.: -
 21th speed 1/min: 600
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 17.0...20.00
 1000S.: -

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm3/: 0.0...3.00
 1000S.: -

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 6.00...10.00
 1000S.: (3.50...12.50)
 Dispersion cm3/: 3.0
 1000S.: (3.5)

2nd speed 1/min: 800
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.40
1000S.: -
3rd speed 1/min: 600
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1750
Inj.-qty. cm³/: 11.0...13.0 #
difference 1000S.: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1750
Supply pump-
pressure : 0.50...0.70 #
difference bar: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

2nd speed 1/min: 450
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...55.00
1000S.: -

4th speed 1/min: 100
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...80.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: -
MS mm: 0.6...1.0
LDA stroke mm: 6,3
XK mm: 17.0...19.0
XL mm: 10.3...13.7

Remarks:
Overflow restriction 0.75 mm - Part No.
..343,..344 :

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5.9 U12
Edition : 22.01.92
replaces : 09.11.88
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R296-1
Type number : 0 460 426 106
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BTA- 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.85
mm: $\pm 0.02(0.04)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Charge press. hPa: 1000
Setting value mm: 1.00...1.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Charge press hPa: 1000
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 91.50...92.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 43.50...44.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 15.00...21.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 61.00...67.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 65.00...105.00
mind 1000S.: 65.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 1.00...1.40
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 0.10...0.90
mm: (0.00...1.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2.40...3.00
bar: (2.20...3.20)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump pressure bar: 4.10...4.70
bar: (3.90...4.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 5.00...5.60
bar: (4.80...5.80)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
cm³/10s: (26.70...98.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Overflow quantity : 55.60...139.00
cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting point hPa: 550
LDA-stroke mm: 7.5
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 76.50...77.50
1000S.: (73.00...81.00)

2nd speed 1/min: 1270
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1180
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1160
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 61.00...67.00
1000S.: (58.00...70.00)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 75.00...78.00
1000S.: (73.50...79.50)

10th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 82.50...85.50
1000S.: (80.50...87.50)

12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 91.50...92.50
1000S.: (89.00...95.00)

18th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.50...44.50
1000S.: (40.00...48.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100

Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000S.: (13.00...23.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...115.00
1000S.: (65.00...115.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4

MS mm: -
SVS max. mm: 3.0
LDA stroke mm: 7.5
XK mm: 18.8...20.8
XL mm: 10.4...13.8

Remarks:

: C.D.C. # 391 2133

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5.9 U49
Edition : 23.01.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R296-1
Type number : 0 460 426 106
Customer Part-No. : 391 6108

Customer-specific information
Customer : CDC

Engine : 6 BTA- 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.85
mm: $\pm 0.02(0.06)$

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900

MD4

Charge press. hPa: 1000
Setting value mm: 1.00...1.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Charge press hPa: 1000
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 89.00...90.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 52.00...53.00
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 15.00...21.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 55.50...61.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 65.00...105.00
mind 1000S.: 65.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.70...2.50
 mm: (1.40...2.80)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 900
 Charge press hPa: 1000
 TD travel mm: 1.00...1.40
 mm: (0.50...1.90)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 750
 Charge press hPa: 1000
 TD travel mm: 0.10...0.90
 mm: (0.00...1.20)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 2.40...3.00
 bar: (2.20...3.20)

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4.10...4.70
 bar: (3.90...4.90)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.00...5.60
 bar: (4.80...5.80)

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
 Charge-air pressure-setting point hPa: 550
 LDA-stroke mm: 5.6
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 89.50...90.50
 1000S.: (86.00...94.00)

2nd speed 1/min: 1240
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

3rd speed 1/min: 1180
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)

5th speed 1/min: 1160
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 55.50...61.50
 1000S.: (52.50...64.50)

9th speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 73.00...76.00
 1000S.: (71.50...77.50)

10th speed 1/min: 900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 79.00...82.00
 1000S.: (77.00...84.00)

12th speed 1/min: 750
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³/: 89.00...90.00
 1000S.: (86.50...92.50)

18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 52.00...53.00
 1000S.: (48.50...56.50)

Mech. shutoff:
 Mech. Abstimmung:

1st speed 1/min: 1100
 Charge press. hPa: 1000

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000S.: (13.00...23.00)
Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...115.00
1000S.: (65.00...115.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: -

MO6

SVS max. mm: 3.0
LDA stroke mm: 5.6
XK mm: 10.8...20.8
XL mm: 10.4...13.8

Remarks:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5.9 U48
Edition : 23.01.92
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE6/12F1100R296-1
Type number : 0 460 426 106
Customer Part-No. : 391 6109

Customer-specific information
Customer : CDC

Engine : 6 BTA- 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.85
mm: $\pm 0.02(0.06)$
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900

M07

Charge press. hPa: 1000
Setting value mm: 1.00...1.40
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
Charge press hPa: 1000
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 89.00...90.00
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 52.00...53.00
Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 15.00...21.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 55.50...61.50
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 65.00...105.00
mind 1000S.: 65.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.70...2.50
 mm: (1.40...2.80)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 900
 Charge press hPa: 1000
 TD travel mm: 1.00...1.40
 mm: (0.50...1.90)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 750
 Charge press hPa: 1000
 TD travel mm: 0.10...0.90
 mm: (0.00...1.20)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 2.40...3.00
 bar: (2.20...3.20)

Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 900
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4.10...4.70
 bar: (3.90...4.90)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.00...5.60
 bar: (4.80...5.80)

Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 41.70...83.40
 (26.70...98.40)
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 55.60...139.00
 (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
 Charge-air pressure-setting point hPa: 550
 LDA-stroke mm: 5.6
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 89.50...90.50
 1000S.: (86.00...94.00)

2nd speed 1/min: 1240
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

3rd speed 1/min: 1180
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)

5th speed 1/min: 1160
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 55.50...61.50
 1000S.: (52.50...64.50)

9th speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 73.00...76.00
 1000S.: (71.50...77.50)

10th speed 1/min: 900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 79.00...82.00
 1000S.: (77.00...84.00)

12th speed 1/min: 750
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 89.00...90.00
 1000S.: (86.50...92.50)

18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 52.00...53.00
 1000S.: (48.50...56.50)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1100
 Charge press. hPa: 1000

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...21.00
1000S.: (13.00...23.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...115.00
1000S.: (65.00...115.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: 5.0...5.4
MS mm: -

M09

SVS max. mm: 3.0
LDA stroke mm: 5.6
XK mm: 18.8...20.8
XL mm: 10.4...13.8

Remarks:

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : NIS 6.6 A
Edition : 30.01.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1200R325-1
Type number : 0 460 426 195
Customer Part-No. :

Customer-specific information
Customer : NISSAN-MISA

Engine : B 6.60 T

Power KW: 100

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Charge press. hPa: 1000

M10

Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Charge press hPa: 1000
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 86.50...87.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 78.50...79.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 21.00...25.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1325
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 51.00...57.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 105.00...155.00
mind 1000S.: 105.0
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900
 Charge press hPa: 1000
 TD travel mm: 6.30...6.90
 mm: (6.10...7.10)
 electromagnet Volt: 12
 2nd speed 1/min: 1200
 Charge press hPa: 1000
 TD travel mm: 3.70...4.50
 mm: (3.40...4.80)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 700
 Charge press hPa: 1000
 TD travel mm: 1.00...1.80
 mm: (0.70...2.10)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1200
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.70...8.30
 bar: (7.50...8.50)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.30...6.90
 bar: (6.10...7.10)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4.40...5.00
 bar: (4.20...5.20)
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 75.00...119.00
 quantity cm³/10s: (75.00...119.00)
 2nd speed 1/min: 1200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.00...180.00
 quantity cm³/10s: (97.00...180.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
 Charge-air pressure-setting point hPa: 375
 LDA-stroke mm: 5.0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 82.00...83.00
 1000S.: (78.50...86.50)
 3rd speed 1/min: 1400
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...6.00
 1000S.: (0.00...6.00)
 5th speed 1/min: 1325
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 51.00...57.00
 1000S.: (47.00...61.00)
 9th speed 1/min: 1200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 76.50...79.50
 1000S.: (74.50...81.50)
 12th speed 1/min: 800
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 86.50...87.50
 1000S.: (84.00...90.00)
 18th speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 78.50...79.50
 1000S.: (76.00...82.00)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 1200
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
 Charge press. hPa: -
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 21.00...25.00
1000S.: (18.00...28.00)
Dispersion cm³/: 5.0
1000S.: (5.0)
4th speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 120.00...160.00
1000S.: (115.00...165.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 105.00...155.00
1000S.: (105.00...155.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 1.1...1.5
LDA stroke mm: 5.0

Remarks:

⋮

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

Overflow restriction 0.75 mm - Part No.
..343,..344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1.9 K8
Edition : 31.01.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F230UR425
Type number : 0 460 484 047
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD9A

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 27.90...28.90
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.00...3.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2650
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...61.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 2.00...8.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 1.90...2.30
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump
pressure
difference bar: 0.90...1.30
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.40...3.80
mm: (3.10...4.10)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.00...1.80
mm: (0.70...2.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4.40...5.00
bar: (4.20...5.20)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 6.20...6.80
bar: (6.00...7.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2200
Supply-pump
pressure bar: 8.50...9.10
bar: (8.30...9.30)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

5th speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)

8th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 21.00...27.00
1000S.: (19.00...29.00)

9th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.10...32.10
1000S.: (29.90...34.30)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.90...28.90
1000S.: (26.20...30.60)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.80...30.80
1000S.: (26.30...32.30)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 2200
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff

electromagnet Volt: 12
Del. quantity cm3/: 7.00...9.00
1000s.: (4.00...12.00)

High Idle:

1st speed 1/mi: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.00...9.00
1000s.: (4.00...12.00)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.00...3.00
1000s.: (0.50...4.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm3/ : 2.00...8.00
difference 1000s.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 1.90...2.30
difference mm: (1.40...2.80)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.90...1.30
difference bar: (0.70...1.50)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 225
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...71.00
1000s.: (37.00...71.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 20.00...40.00
1000s.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...61.00
1000s.: (35.00...61.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 1.2...1.6
XK mm: 17.0...19.0
XL mm: 12.0...15.4

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1.9 K11
Edition : 31.01.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R425-1
Type number : 0 460 484 054
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD9AL - D70/N2/N3

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.50...3.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 30.00...31.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.50...3.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2650
Del. quantity cm3/
1000S.: 9.00...13.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 42.00...68.00
mind 1000S.: 42.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 2.00...8.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 2.00...3.00
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump

pressure difference bar: 1.20...1.80

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 6.70...7.50
mm: (6.40...7.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.50...3.90
mm: (3.00...4.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.20...2.00
mm: (0.90...2.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 3.30...3.90
bar: (3.10...4.10)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump pressure bar: 5.70...6.30
bar: (5.50...6.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2200
Supply-pump pressure bar: 8.20...8.80
bar: (8.00...9.00)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

5th speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...13.00
1000S.: (7.00...15.00)

8th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000S.: (13.00...23.00)

9th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.50...34.50
1000S.: (31.30...35.70)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...31.00
1000S.: (28.30...32.70)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...33.00
1000S.: (28.50...34.50)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 2200
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 6.50...8.50
1000S.: (3.50...11.50)

High Idle:

1st speed 1/mi: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...10.50
1000S.: (5.50...13.50)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...3.50
1000S.: (1.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 2.00...8.00
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 2.00...3.00
difference mm: (1.90...3.10)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 1.20...1.80
difference bar: (1.10...1.90)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 225
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...71.00
1000S.: (37.00...71.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...68.00
1000S.: (42.00...68.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 1.2...1.6

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1.9 K13
 Edition : 31.01.92
 replaces : -
 Calibrating oil : ISO-4113
 Injection pump : VE4/3F2300R425-2
 Type number : 0 460 484 055
 Customer Part-No. :

Customer-specific information
 Customer : PSA

Engine : XUD9A-N2 - BVA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Indicator setting
 Piston stroke mm: 0.3
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
 Setting value mm: 3.40...3.80
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
 Setting value bar: 6.20...6.80
 Shutoff
 electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
 Del. quantity cm3/
 1000S.: 30.00...31.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm3/: 2.0
 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
 Del. quantity cm3/
 1000S.: 2.50...3.50
 Shutoff
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2650
 Del. quantity cm3/
 1000S.: 9.00...13.00
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm3/: 42.00...68.00
 mind 1000S.: 42.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1250
 Charge press hPa: 12
 Inj.-qty. cm3/
 difference 1000S.: 2.00...8.00
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1250
 TD-travel
 difference mm: 1.50...2.70
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1250

Supply pump

pressure difference bar: 0.80...1.40

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.40...3.80
mm: (2.90...4.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.00...1.80
mm: (0.70...2.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 4.40...5.00
bar: (4.20...5.20)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump pressure bar: 6.20...6.80
bar: (6.00...7.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2200
Supply-pump pressure bar: 8.50...9.10
bar: (8.30...9.30)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
cm³/10s: (27.80...97.30)
2nd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...138.90
cm³/10s: (41.70...152.90)

M20

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000s.: (0.00...6.00)

5th speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...13.00
1000s.: (7.00...15.00)

8th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000s.: (13.00...23.00)

9th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.50...34.50
1000s.: (31.30...35.70)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...31.00
1000s.: (28.30...32.70)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...33.00
1000s.: (28.50...34.50)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 2200
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 6.50...8.50
1000S.: (3.50...11.50)

High Idle:

1st speed 1/mi: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...10.50
1000S.: (5.50...13.50)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...3.50
1000S.: (1.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 2.00...8.00
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 1.60...2.60
difference mm: (1.50...2.70)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.80...1.40
difference bar: (0.70...1.50)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 225
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...71.00
1000S.: (37.00...71.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...68.00
1000S.: (42.00...68.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 1.2...1.6

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1.9 K12
Edition : 31.01.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R425-3
Type number : 0 460 484 057
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD9AL - BVA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...43.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 30.00...31.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.50...3.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2650
Del. quantity cm3/
1000S.: 9.00...13.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 42.00...68.00
mind 1000S.: 42.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 2.00...8.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 2.40...3.40
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump

pressure
difference bar: 1.70...2.30
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 6.40...7.20
mm: (6.10...7.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.10...3.50
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.60...1.40
mm: (0.30...1.70)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4.40...5.00
bar: (4.20...5.20)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 6.20...6.80
bar: (6.00...7.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2200
Supply-pump
pressure bar: 8.50...9.10
bar: (8.30...9.30)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000s.: (0.00...6.00)

5th speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...13.00
1000s.: (7.00...15.00)

8th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000s.: (13.00...23.00)

9th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.50...34.50
1000s.: (31.30...35.70)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...31.00
1000s.: (28.30...32.70)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...33.00
1000s.: (28.50...34.50)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 2200
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 6.50...8.50
1000S.: (3.50...11.50)

High Idle:

1st speed 1/mi: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...10.50
1000S.: (5.50...13.50)

Residual:

1. Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...3.50
1000S.: (1.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 2.00...8.00
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 2.40...3.40
difference mm: (2.30...3.50)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 1.70...2.30
difference bar: (1.60...2.40)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 225
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...71.00
1000S.: (37.00...71.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...68.00
1000S.: (42.00...68.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 1.2...1.6

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 2.4 S7
Edition : 03.02.92
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE5/8F2100L358
Type number : 0 460 485 003
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 153-2.4L.-T4

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 1.50...1.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 36.00...37.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0

Low-idle speed regulation

Speed 1/min: 415
Del. quantity cm3/
1000S.: 7.00...9.00

Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 540
Del. quantity cm3/
1000S.: 6.50...7.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...85.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm3/
difference 1000S.: 3.50...9.50

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)

1.Speed 1/min: 1500
TD-travel
difference mm: 0.30...0.50

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2100
TD travel mm: 5.30...6.10
mm: (5.00...6.40)
electromagnet Volt: 12
2nd speed 1/min: 1790
TD travel mm: 4.60...5.40
mm: (4.30...5.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 1.50...1.90
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3.80...4.40
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 5.70...6.30

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2100
Supply-pump
pressure bar: 8.10...8.70
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2600
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2400

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)

8th speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...27.00
1000S.: (16.00...28.00)

9th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.50...31.50
1000S.: (28.30...32.70)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...37.00
1000S.: (34.30...38.70)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.30...35.30
1000S.: (30.80...36.80)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 415
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 415
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000S.: (4.00...12.00)

Residual:

1. Rotacao 1/min: 540
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.50...7.50
1000S.: (5.00...9.00)
2nd speed 1/min: 490
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 6.80...8.80
1000S.: (5.30...10.30)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1500
Inj.-qty. cm³/: 3.50...9.50 *
difference 1000S.: (2.50...10.50)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1500
Inj.-qty. cm³/: 0.00...3.00 #
difference 1000S.: (0.00...3.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.30...0.50 *
difference mm: (0.30...0.50)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
TD-travel : 0.90...1.30 #
difference mm: (0.50...1.70)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1
3rd speed 1/min: 1500
Supply pump-
pressure : 0.80...1.20 #
difference bar: (0.60...1.40)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...37.00
1000S.: (17.00...37.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: K-OT
MS mm: 1.2...1.6
SVS max. mm: 2.4

Remarks:

:
On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1.6 X20
Edition : 04.02.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R293-5
Type number : 0 460 494 274
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 086T - 1.6 LLK

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 750
Setting value mm: 3.00...3.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

M28

Speed 1/min: 1250
Charge press hPa: 750
Setting value bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 26.50...27.50

Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 615
Del. quantity cm3/
1000S.: 4.00...5.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...85.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: -
Inj.-qty. cm3/
difference 1000S.: 8.50...12.50
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
Charge press hPa: -
TD-travel
difference mm: 0.60...0.80
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 750
TD travel mm: 6.40...7.20
mm: (6.10...7.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 750
TD travel mm: 3.00...3.40
mm: (2.50...3.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2250
Charge press. hPa: 750
TD travel mm: 7.00...7.80
mm: (6.70...8.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 750
Supply-pump
pressure bar: 3.30...3.90
bar: (3.10...4.10)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 750
Supply-pump
pressure bar: 4.90...5.50
bar: (4.70...5.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2250
Charge press. hPa: 750
Supply-pump
pressure bar: 7.70...8.30
bar: (7.50...8.50)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900*
Charge-air pressure-setting
point hPa: 300
LDA-stroke mm: 5.5
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.00...34.00
1000S.: (30.50...36.50)

2nd speed 1/min: 2650
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

5th speed 1/min: 2525
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (11.00...19.00)

8th speed 1/min: 2425
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.50...36.50
1000S.: (25.50...37.50)

9th speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.50...37.50
1000S.: (34.30...38.70)

12th speed 1/min: 1500
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...43.00
1000S.: (40.30...44.70)

13th speed 1/min: 500
Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.00...31.00
1000S.: (23.50...33.50)
14th speed 1/min: 400
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.50...35.50
1000S.: (27.00...28.00)
15th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.50...27.50
1000S.: (24.00...30.00)
18th speed 1/min: 700
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.00...37.00
1000S.: (32.50...38.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 465
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

Damper set qty.:

2nd speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...13.00
1000S.: (8.00...16.00)

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 465
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...14.00
1000S.: (7.50...18.50)

High Idle:

1st speed 1/mi: 515
Shutoff
electromagnet Volt: 12

NO2

Del. quantity cm³/: 12.00...14.00
1000S.: (8.00...18.00)

Residual:

1.Rotacao 1/min: 615
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 4.00...5.00
1000S.: (1.50...7.50)
2nd speed 1/min: 565
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...7.50
1000S.: (3.00...10.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/ : 8.50...12.50*
difference 1000S.: (6.50...14.50)
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Inj.-qty. cm³/: 0.00...4.50#
difference 1000S.: (0.00...4.50)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.60...0.80*
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
TD-travel : 0.90...1.30
difference mm: (0.60...1.60)#
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.60...1.00#
difference bar: (0.40...1.20)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.6...6.0
MS mm: 1.2...1.6
LDA stroke mm: 5.5

Remarks:

:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

Overflow restriction 0.55 mm - Part No.
..303

On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 2.1 F6
Edition : 03.02.91
replaces : 11.10.91
Calibrating oil : ISO-4113

Injection pump : VE4/9F2150R396-1
Type number : 0 460 494 275
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 11 ATE-BVA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

NO4

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 61.00...62.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 40.50...41.50

Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 475
Del. quantity cm3/
1000S.: 3.50...4.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 44.20...48.20

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 43.00...73.00
mind 1000S.: 43.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 15.00...19.00
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.40...0.60
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 1000
TD travel mm: 6.50...7.30
mm: (6.20...7.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 3.80...4.20
mm: (3.30...4.70)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.40...5.00
bar: (4.20...5.20)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.70...6.30
bar: (5.50...6.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.50...8.10
bar: (7.30...8.30)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700

Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.80...98.30)
2nd speed 1/min: 2000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...152.90
quantity cm³/10s: (40.70...154.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 7.5

Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 55.50...56.50
1000S.: (53.00...59.00)

2nd speed 1/min: 2800
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 0.00...6.00
1000S.: (0.00...6.00)

3rd speed 1/min: 2400
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 36.00...42.00
1000S.: (33.00...45.00)

5th speed 1/min: 2300
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 44.20...48.20
1000S.: (42.20...50.20)

9th speed 1/min: 2000
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 56.50...58.50
1000S.: (55.30...59.70)

12th speed 1/min: 1250
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quynity cm³/ : 61.00...62.00
1000S.: (59.30...63.70)

18th speed 1/min: 700
Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 40.50...41.50
1000S.: (38.00...44.00)

20th speed 1/min: 700
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 62.50...65.50
1000S.: (61.00...67.00)
21th speed 1/min: 450
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...42.00
1000S.: (34.50...44.50)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 2000
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 9.00...11.00
1000S.: (6.00...14.00)

High Idle:

1st speed 1/mi: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 9.00...11.00
1000S.: (6.00...14.00)

Residual:

1.Rotacao 1/min: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.50...4.50
1000S.: (2.00...6.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250

N06

Inj.-qty. cm3/: 15.00...19.00
difference 1000S.: (12.00...22.00)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
TD-travel : 0.40...0.60
difference mm: (0.40...0.60)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1250
Supply pump-
pressure : 0.50...0.90
difference bar: (0.30...1.10)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...80.00
1000S.: (40.00...80.00)

2nd speed 1/min: 325
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 30.00...53.00
1000S.: (30.00...53.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 43.00...73.00
1000S.: (43.00...73.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 0.7...1.1

Remarks:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1.9 C5
Edition : 03.02.92
replaces : 10.12.91
Calibrating oil : ISO-4113

Injection pump : VE4/9F2200R420
Type number : 0 460 494 277
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 028.D - 1.9L.

Power KW: 55

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.50...3.90

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.50...6.10
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 42.00...43.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575
Del. quantity cm3/
1000S.: 5.50...6.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...65.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 4.00...10.00

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)

1.Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 6.50...7.30
mm: (6.20...7.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.50...3.90
mm: (3.00...4.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 1.40...2.20
mm: (1.10...2.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump
pressure bar: 4.30...4.90
bar: (4.10...5.10)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 5.50...6.10
bar: (5.30...6.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2200
Supply-pump
pressure bar: 7.70...8.30
bar: (7.50...8.50)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750

N09

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)
8th speed 1/min: 2425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 19.00...29.00
1000S.: (18.00...30.00)
9th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.70...38.70
1000S.: (35.50...39.90)
12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...43.00
1000S.: (40.30...44.70)
15th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.70...36.70
1000S.: (32.20...38.20)
20th speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.50...41.50
1000S.: (33.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (6.00...14.00)

High Idle:

1st speed 1/mi: 525

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (6.00...14.00)

Residual:

1. Rotacao 1/min: 575
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...6.50
1000S.: (4.00...8.00)
2nd speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.30...9.30
1000S.: (5.80...10.80)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 4.00...10.00#
difference 1000S.: (3.00...11.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Inj.-qty. cm³/: 0.00...3.00*
difference 1000S.: (0.00...3.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.60...0.80#
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.80...2.20*
difference mm: (1.50...2.50)

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: -
3rd speed 1/min: 1250
Supply pump-
pressure : 1.10...1.50*
difference bar: (0.90...1.70)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

1st speed 1/min: 1000

N10

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...29.00
1000S.: (25.00...31.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...75.00
1000S.: (35.00...75.00)
2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...50.00
1000S.: (30.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...65.00
1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.1...5.5
MS mm: 1.1...1.5

Remarks:

:
Overflow restriction 0.55 mm - Part No.
..303

On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1.9 L
Edition : 07.02.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R432
Type number : 0 460 494 284
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1.9L UATL - B3

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.70...4.10
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.50...6.10
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 42.00...43.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575
Del. quantity cm3/
1000S.: 5.50...6.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2600
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...65.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 4.00...10.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
 TD travel mm: 6.60...7.40
 mm: (6.30...7.70)
 electromagnet Volt: 12
 2nd speed 1/min: 1250
 TD travel mm: 3.70...4.10
 mm: (3.20...4.60)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750
 TD travel mm: 1.60...2.40
 mm: (1.30...2.70)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
 Supply-pump pressure bar: 4.30...4.90
 bar: (4.10...5.10)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1250
 Supply-pump pressure bar: 5.50...6.10
 bar: (5.30...6.30)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2200
 Supply-pump pressure bar: 7.70...8.30
 bar: (7.50...8.50)
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (27.80...97.30)
 2nd speed 1/min: 2200
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...138.90
 (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...6.00
 1000S.: (0.00...6.00)
 5th speed 1/min: 2600

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...14.00
 1000S.: (8.00...16.00)
 8th speed 1/min: 2500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 21.50...31.50
 1000S.: (20.50...32.50)
 9th speed 1/min: 2200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.70...38.70
 1000S.: (35.50...39.90)
 12th speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.00...43.00
 1000S.: (40.30...44.70)
 15th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 33.70...36.70
 1000S.: (32.20...38.20)
 20th speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 35.50...41.50
 1000S.: (33.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

Idle delivery:

Damper set qty.:

2nd speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 11.00...13.00
 1000S.: (8.00...16.00)

LFG-setting:

solidale con carcassa:

Idle delivery:

1st speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 9.00...11.00
 1000S.: (6.00...14.00)

High Idle:

1st speed 1/mi: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (6.00...14.00)

Residual:

1. Rotacao 1/min: 575
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...6.50
1000S.: (4.00...8.00)
2nd speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.30...9.30
1000S.: (5.80...10.80)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/ : 5.00...7.00 #
difference 1000S.: (6.00...6.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Inj.-qty. cm³/ : 0.00...3.00 *
difference 1000S.: (0.00...3.00)
Timing valve Volt: 1
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.60...0.80 #
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.80...2.20 *
difference mm: (1.50...2.50)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 1.10...1.50 *
difference bar: (0.90...1.70)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.

N13

terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

1st speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...29.00
1000S.: (25.00...31.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...75.00
1000S.: (35.00...75.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...50.00
1000S.: (30.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...65.00
1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.1...5.5
MS mm: 1.1...1.5

Remarks:

On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1.9 C6
Edition : 03.02.92
replaces : 10.12.91
Calibrating oil : ISO-4113

Injection pump : VE4/9F2200R420-4
Type number : 0 460 494 287
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 028.D - 1.9L.

Power KW: 55

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.50...3.90

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.50...6.10

Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575
Del. quantity cm3/
1000S.: 5.50...6.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...65.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 4.00...10.00

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250

TD-travel
difference mm: 0.60...0.80

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 6.50...7.30
mm: (6.20...7.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.50...3.90
mm: (3.00...4.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 1.40...2.20
mm: (1.10...2.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump
pressure bar: 4.30...4.90
bar: (4.10...5.10)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 5.50...6.10
bar: (5.30...6.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2200
Supply-pump
pressure bar: 7.70...8.30
bar: (7.50...8.50)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750

N15

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)
8th speed 1/min: 2425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 19.00...29.00
1000S.: (18.00...30.00)
9th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.70...38.70
1000S.: (35.50...39.90)
12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...43.00
1000S.: (40.30...44.70)
15th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.70...36.70
1000S.: (32.20...38.20)
20th speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.50...41.50
1000S.: (33.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (6.00...14.00)

High Idle:

1st speed 1/mi: 525

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (6.00...14.00)

Residual:

1. Rotacao 1/min: 575
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...6.50
1000S.: (4.00...8.00)
2nd speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.30...9.30
1000S.: (5.80...10.80)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 4.00...10.00#
difference 1000S.: (3.00...11.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Inj.-qty. cm³/: 0.00...3.00*
difference 1000S.: (0.00...3.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correctore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.60...0.80#
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.80...2.20*
difference mm: (1.50...2.50)

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: -
3rd speed 1/min: 1250
Supply pump-
pressure : 1.10...1.50*
difference bar: (0.90...1.70)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

1st speed 1/min: 1000

N16

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...29.00
1000S.: (25.00...31.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...75.00
1000S.: (35.00...75.00)
2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...50.00
1000S.: (30.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...65.00
1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.1...5.5
MS mm: 1.1...1.5

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,7 D
Edition : 03.02.92
replaces : 03.12.91
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R443
Type number : 0 460 494 293
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 17 YD

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.00...2.40
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.00...4.60
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1300
Del. quantity cm3/
1000S.: 31,2...32,2
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2,5
1000S.: (2,5)

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Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 8.00...10.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,5
1000S.: (3,0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.50...2.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2735
Del. quantity cm3/
1000S.: 7.00...11.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 28,0...44,0
mind 1000S.: -
KSB/AFB
Valve Volt: 12

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: 11.00...19.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
TD-travel
difference mm: 0.60...0.80
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1000
Supply pump
pressure
difference bar: 0,10...0,30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
TD travel mm: 0,80...3,20
mm: -
KSB/AFB
valve Volt: -
electromagnet Volt: 12
2nd speed 1/min: 800
TD travel mm: 1,90...4,30
mm: -
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
TD travel mm: 1,90...4,30
mm: -
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800

TD travel mm: 0.90...1.70
mm: (0.60...2.00)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1000
TD travel mm: 2,00...2,40
mm: (1,50...2,90)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
6th speed 1/min: 2000
TD travel mm: 6,70...7,50
mm: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
7.Rotacao 1/min: 2300
TD travel mm: 7,50...8,30
mm: (7,20...8,60)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
Supply-pump
pressure bar: 7.60...8.20
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4.00...4.60
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Supply-pump
pressure bar: 3.40...4.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)
 2nd speed 1/min: 2300
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2735
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 7,00...11,00
 1000S.: (5,00...13,00)
 2nd speed 1/min: 2575
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 18,5...24,50
 1000S.: -
 3rd speed 1/min: 2300
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 27,2...28,8
 1000S.: (26,2...30,8)
 4th speed 1/min: 2000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 26.50...29.50
 1000S.: (25.70...30.30)
 5th speed 1/min: 1300
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 31,2...32,2
 1000S.: (29,4...34,0)
 6th speed 1/min: 700
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 24.50...27.50
 1000S.: (23.00...29.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -
 KSB/AFB
 valve Volt: -

Damper set qty.:

LFG-setting:
 solidale con carcassa:
 Idle delivery:

1st speed 1/min: 450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 8.00...10,00
 1000S.: (6.00...12.00)
 Dispersion cm3/: 2,5
 1000S.: (3,0)

Residual:

1. Rotacao 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 1.50...2.50
 1000S.: (0.00...4.00)
 2nd speed 1/min: 750
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...1.60
 1000S.: -

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1000
 Inj.-qty. cm3/ : 8.00...10.00
 difference 1000S.: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Inj.-qty. cm3/ : 11,0...19,0
 difference 1000S.: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:

correttore anticipo iniezione (SV):

1st speed 1/min: 1000
TD-travel : 0.60...0.80
difference mm: -

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

SP press.-dif.measurement:

pompa di mandata (FP):

1st speed 1/min: 1000

Supply pump-

pressure : 0.10...0.30

difference bar: -

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 400

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 25.00...35.00

1000s.: -

2nd speed 1/min: 500

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 22.50...32.50

1000s.: -

3rd speed 1/min: 100

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 28.00...44.00

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: 5,3...5,7

MS mm: 0,7...1,1

XK mm: -

XL mm: -

Remarks:

Overflow restriction 0.55 mm - Part No.
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